

PARLEC
Measurably Better



MASTER TOOLING CATALOG

Toolholding, Tapping, and Boring Solutions



Toolholding



Tapping



Boring



HISTORY

1948

Parlec is established in Rochester N.Y., as a job shop specializing in the manufacturing of Sulky Hubs.

1973

Parlec begins producing and distributing the Numertap and Autofacer product lines.

1977

Parlec expands its product line with the introduction of Toolholders, which are sold as Numertap and Autofacer accessories.

1980

The first Parsetter TMM[®] is produced.

1985

Parlec builds a new 42,000 square-foot, state-of-the-art manufacturing facility just outside of Rochester in Fairport, N.Y.

1992

Parlec begins to manufacture and distribute its own line of Boring Tools.

1997

Parlec becomes ISO 9001 certified. Parlec's sales triple from 1992-1997.

1998

Parlec further enhances its product line to include Workholding. Construction of a 58,000 square-foot plant addition begins.

2003

Parlec enters the Asian market with the opening of a sales and service office in Nanjing China.

2004

Parlec acquires Bristol Tool. Driven and static tools are added to Parlec's extensive product line. A new sales, engineering and distribution facility opens in Bristol, England.

2006

Parlec continues to expand its world wide footprint by opening a Wholly Owned Foreign Enterprise in Nanjing. This gives the company full sales, engineering, customer support and distribution capabilities on 3 continents.

2009

Sales offices are opened in Tianjin, Xian, Wuxi, and Chengdu to expand the China presence.

2010

Parlec partners with Gerardi for distribution of Driven & Static Tooling in Europe. Parlec begins distribution of Right angle heads in China.

2012

Parlec successfully completes a \$5 million dollar capital investment campaign to automate and expand its manufacturing capabilities in the United States.

2014

Parlec partners with TDM Systems.

Tool Machining Solutions



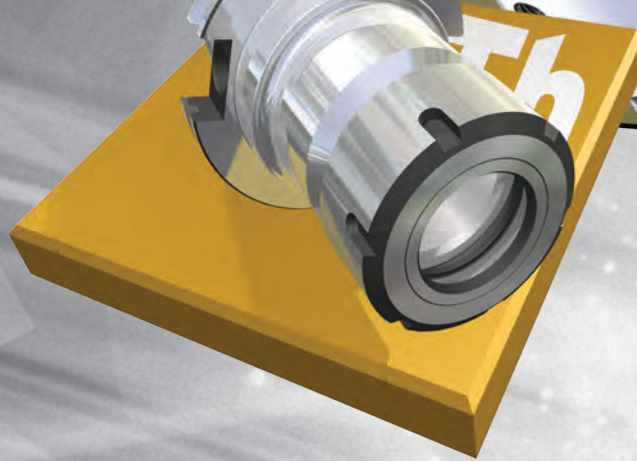
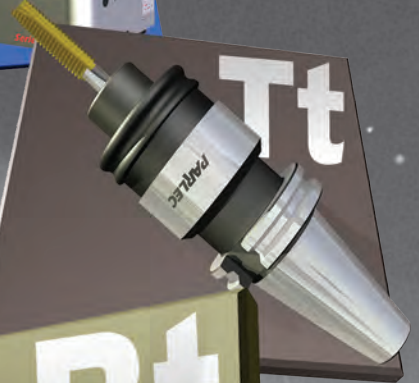
Widest Range of Rigid, Tension and Compression Tapping



Precision Modular Boring Systems



Toolholding Production and High Performance Solutions



PARLEC

TOOLHOLDING

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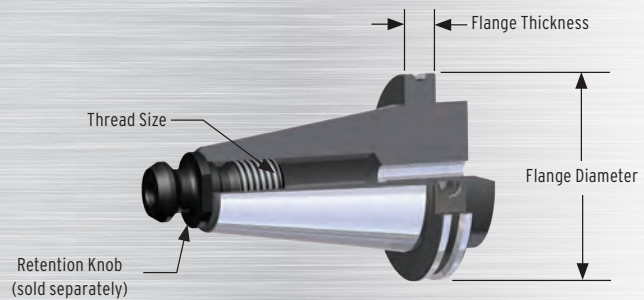
CAT and BT Taper Specifications

CONNECTION IS EVERYTHING

No matter what the spindle application, Parlec offers simple, highly repeatable and versatile tooling solution.

> CAT V Flange Taper Specifications

- Meets or exceeds ASME B5.50-2009 specifications and all current specification updates except where improvements are made for high speed operation.
- All Parlec CAT tooling incorporates ParSymmetry for balance and chip hole for identification.

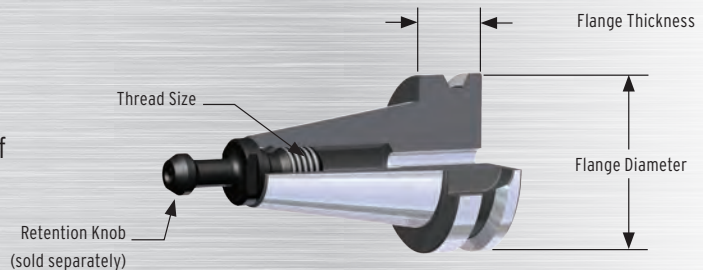


CAT TAPER SPECIFICATIONS

Taper Type	Gage Diameter	Flange Diameter	Flange Thickness	Thread Size
C40	1.75	2.50	0.625	5/8" - 11"
C50	2.75	3.87	0.625	1" - 8"
C60	4.25	5.50	0.625	1 1/4" - 7"
C40F	1.75	2.50	0.711	5/8" - 11"
C50F	2.75	3.87	0.691	1" - 8"

> BT Taper Specifications

- Meets or exceeds JIS B6339-1986 specifications.
- Taper is toleranced so that any error increases rate of taper only. Refer to Manufacturing Specifications for tolerance specifications.

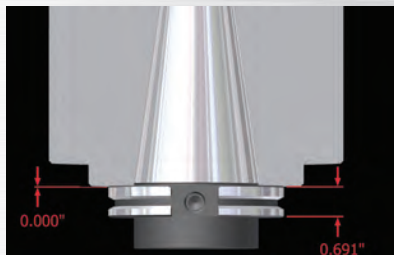
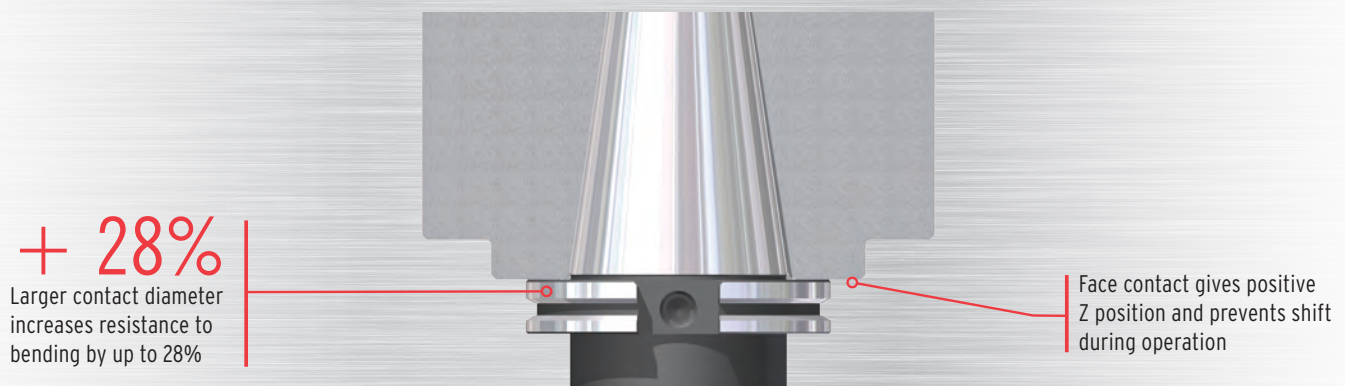


BT TAPER SPECIFICATIONS

Taper Type	Gage Diameter	Flange Diameter	Flange Thickness	Thread Size
B30	1.25	1.81	0.787	M12 - 1.75
B40	1.75	2.48	0.984	M16 - 2.0
B50	2.75	3.94	1.378	M24 - 3.0
B30F	1.25	1.81	0.865	M12 - 1.75
B40F	1.75	2.48	1.062	M16 - 2.0

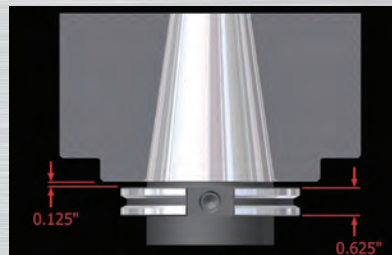
CONNECTION IS EVERYTHING SIMULFIT® SYSTEM - DUAL CONTACT TAPER

- > Traditional steep taper connection is taper only.
- > Simultaneous contact of taper and face will improve rigidity of the connection up to 28%.
- > Simultaneous fit is not exclusive to HSK, but is suitable for steep taper.



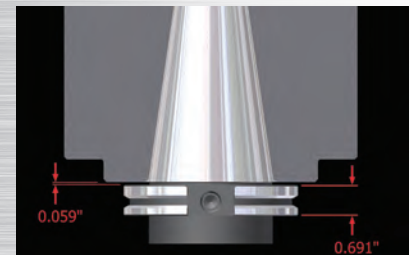
Spindle Compatible to BIG-PLUS®

- Steep taper holder designed to fit a BIG-PLUS® compatible spindle
- Result is taper and face simultaneous contact only



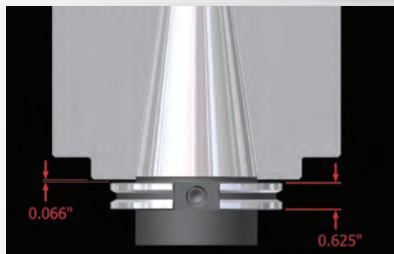
Standard Spindle with Standard CAT Toolholder

- Results in clearance, taper contact only



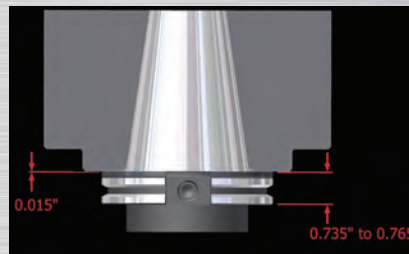
Spindle with SimulFit® Toolholder

- Results in clearance, taper contact only



Spindle Compatible to BIG-PLUS® with Standard CAT Toolholder

- Results in clearance, taper contact only



Standard Spindle with Modified CAT Toolholder Fitted with Custom Spacer

- Results in simultaneous taper and face contact - dual contact

**BIG-PLUS® is a registered trademark of Daishowa Seiki Kabushiki Kaisha and that Daishowa Seiki Kabushiki Kaisha does not endorse or sponsor the products of Parlec.*

Coolant Supply Options

COOLANT SUPPLY OPTIONS

Available coolant supply from the spindle

- > Through the spindle
- > Flange Entry (Form B)

Standard Through Coolant



Coolant delivered from the spindle through the knob and exits through the cutting tool. Coolant through knobs sold separately.

AD/B Convertible Coolant



With Screws: Coolant delivered from the spindle through the knob and exits through the cutting tool. Coolant through knobs sold separately.



Without Screws: Coolant delivered from the spindle through the flange and exits through the cutting tool. Solid knob required. Solid knobs sold separately.

> Through-Spindle

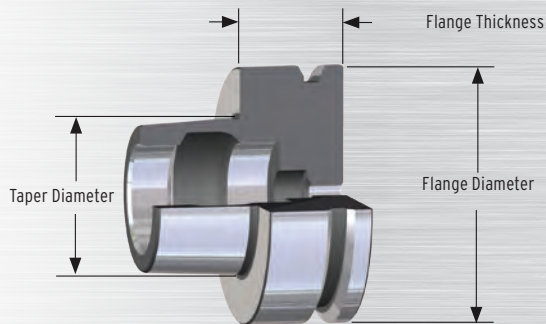
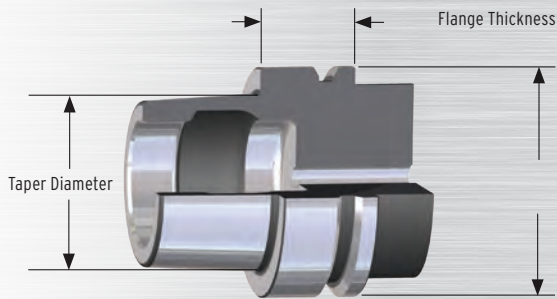
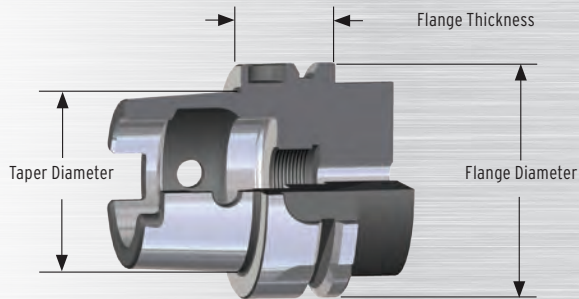
- Through holes are standard in all Parlec holders where applicable. Solid and through hole retention knobs are available to accommodate coolant and non-coolant applications.

> Through-Flange

- Combined with solid retention knobs Form B holes through flange, accept the coolant from the spindle.
- Available standard for many tools and available as a standard modification for most tools.
- Form B convertible or AD/B (BC) is available in many sizes.
- The AD/B (BC) style can be used as either through the spindle, as supplied, or converted to Form B, through the flange.
- Flange entry is enabled by removing two screws.

HSK Taper Specifications

CONNECTION IS EVERYTHING



HSK Form A Taper Specifications

- Meets DIN 69893-1 Form A specifications.
- Drive slots for moderate to heavy cutting forces.

HSK Form E Taper Specifications

- Meets DIN 69893-1 Form E specifications.
- No drive slots or orientation slots for high speed operation.

HSK Form F Taper Specifications

- Meets DIN 69893-1 Form F specifications.
- Larger face contact area for higher torsional load at higher speeds (smaller taper than Form E).

HSK TAPERS

Taper Type	Flange Diameter	Flange Thickness
HSK32E	32	35
HSK40E	40	35
HSK40A	40	35
HSK50A	63	42
HSK63A	63	42
HSK63A/80	63	42
HSK100A	100	45
HSK125A	125	45
HSK63F	63	42

HSK COOLANT TUBES

Taper Type	Part No.	Tube Wrench No.
HSK40	H40TUBE	H40W
HSK63	H63TUBE	H63W
HSK63/80	H63TUBE	H63W
HSK100	H100TUBE	H100W
HSK125	H125TUBE	H125W

Coolant Tube



Tube Wrench



Concentricity, Rotational Speed, & Balance

ROTATIONAL SPEED AND BALANCE

A toolholder is the interface between a precision machine spindle and a precision cutting tool. The toolholder has three base elements; the taper connection, the retaining device and the cutting tool connection.

TAPER DESIGN PRINCIPLES

Common toolholders for machine tool spindles today are typically one of two classes of taper; steep taper (Cat, BT, DIN) and hollow taper (HSK).

> Steep Taper

Steep Taper is the most commonly used taper principal. It is offered in different configurations, CAT, DIN, BT or others such as SK, NMTB, etc. The steep taper is held into the spindle through the use of a retention knob or pull stud that is affixed to the nose of the taper or by a draw bar internal to the machine spindle.

The steep taper designs are available with taper only contact or SimulFit[®], simultaneous taper and face contact. SimulFit[®] is available in two standard forms and can be retrofitted to any spindle even if the face is not qualified.

The steep taper is also available with through the spindle coolant, or flange entry coolant. Flange entry coolant also known as Form B or convertible Form AD/B (BC), is offered standard on many tools and available through modification on most tools.

Steep Taper provides very good durability and excellent dampening characteristics for speeds ranging from very low to moderately high. The typical maximum is 30,000 rpm for 30 taper, 20,000 rpm for 40 taper and 15,000 rpm for 50 taper. At higher speeds the spindle may expand due to centrifugal forces allowing the taper to draw into the spindle. This restricts the practical speeds that steep taper can be used. The length of the steep taper allows for a straight line bending mode based on applied side forces.

> Hollow Taper

HSK tools have a much shallower taper and an internal drawbar. HSK is translated from the German name Kegel-Hohlschafte or hohl shaft kegel. HSK tools are available in many sizes and forms. Due to the face contact (no movement allowed) and the hollow thin wall (expands to fill the spindle) of the HSK design, the spindle speed is not restricted by draw-in of the holder due to centrifugal forces. HSK spindles can exceed speeds of 40,000 rpm. HSK Form E and F spindles do not utilize drive keys and therefore are not practical at lower speed, higher force applications. The short thin wall taper and face contact provide a stiffer bending mode at lower forces and very rapid bending at higher forces. This results in a less dynamic stiffness mode.

BALANCE DESIGN PRINCIPLES

Toolholders are a very important element in the overall performance of cutting tools at high speeds. The forces generated against a machine tool spindle can come from many places. One of them is unbalance. When the cutting forces are low and the spindle speeds are high then the forces from unbalance can cause damage to the machine tool spindle bearings. High uneven cutting forces generated by an endmill in an traditional endmill holder can greatly overshadow forces generated by unbalance. However if a precision collet, shrink or other symmetrically designed systems are used at high speed, the unbalance can be a large contributor to the spindle bearing wear. Balance should be properly applied to the holder, and often the holder assembly, when the forces from unbalance will affect the performance above that of the normal cutting forces.

> **Balanced Toolholders**

Tools that are designed for high speed operation are balanced to G2.5 at speeds up to 30,000 rpm. This will include such tools as ER Collet Chucks, Shrink Fit, ERos[®], etc. Parlec will balance most tools with a standard taper connection to G2.5 and up to 40,000 rpm. The maximum capable balance is 1 g/mm . Any time you have a tool that will mount with a device that can change the balance, such as a side lock end mill, hydraulic chuck, milling chuck, collet chuck with standard threads, tightening and loosening of the device will change the effective balance. Unbalanced assembly results anytime a cutting tool has uneven flutes, uneven grinds, or is chucked in a way that has runout. Under extremely high speed and low force applications, it is best to balance as an assembly.

> **Balanceable Toolholders**

The use of balanceable Toolholders provide the benefit of balance correction, at each assembly, when a precision level of balance is preferred. This solution requires that the user have a balancing machine. Parlec's radial offset technology provides a non-intrusive, low cost precision method of balancing toolholder assemblies.

> **Parlec ParSymmetry Toolholders**

All Parlec toolholders are designed with ParSymmetry. This ensures that the unbalanced design of the flange is eliminated.

Concentricity, Rotational Speed, & Balance

SELECTING THE PROPER TOOLHOLDER TYPE

> Friction Drive vs. Positive Drive

The most common positive drive toolholder is the Weldon end mill holder. This type of system requires flats or some other feature on the cutting tool shank raising the cost of the cutting tool. The positive drive nature virtually eliminates pull out or spinning potential during a cut.

Friction drive such as Collet Chucks and Shrink Holders are more likely to result in concentric and higher speed operations. Clamping relies on either compression, as in power milling and hydraulic chucks, or wedging, as in collets, to do the clamping on the round shank. In the case of friction drive, the question is how much torque, vibration, force or combination of these will it take to allow slipping.

Types of friction drive holders include EROs®, heat shrink, ER collet chucks, power milling chucks, hydraulic chucks, single and double angle collet chucks.

> Variables

- Reduction bushing systems consume some of the clamping force to absorb the clearance between the holder and the reduction bushing as well as the reduction bushing and the tool shank. This results in much less performance when not used on size.
- Collets use linear travel to create a wedge to generate the clamping force. Most collet systems are designed to collapse a considerable distance. When the collet collapses below its nominal size the od and id of the collet are no longer matched to the holder seat and the cutter shank diameter lessening the contact area. This results in reduced concentricity and grip force.
- Heat shrink utilizes thermal expansion to give a clearance to insert the tool. The cooling of the holder shrinks the body back to the original size. The cutting tool interference with this movement creates the clamping force. There is no action in this process to make up for variables in bore or cutting tool shank diameters.

> Collet Style vs. Bore Style

Collet style tools are made to be more flexible than a tool with a sized bore such as heat shrink or Weldon style. This can be more cost effective but adds complexity to the assembly process and requires better and more defined cleaning and storage techniques. Collets or reduction bushings allow a common holder to be used on many size applications. This is especially valuable to a job shop environment where the jobs may change many times.

SELECTING THE BEST COLLET TYPE TOOLHOLDING SYSTEM

> EROS® System

Designed to provide the ultimate in Extreme performance. EROS® offers all of the benefits of a collet system but is designed to eliminate all of the errors that come from the typical collet flexible collapse system. EROS® is ER ON SIZE. Machined for the best fit and precision without the forced collapse provides the best combination for precision, rigidity, grip force and speed.

> ER Collet System

This system is the best of the production and higher quality systems for flexible machining operations. It is available in different configurations to address the precision, quality and ruggedness to fit a wide spectrum of drilling and lighter milling applications. Great balance of precision, rigidity, grip, speed and durability and affordability.

> Power Milling Chucks

Good product to use when heavy rough milling with either cobalt or carbide solid tools. Typically they would be used when the speed is lower and the feed per tooth is higher. The system has very good concentricity and very good grip force.

> Single-Angle Collet Chuck System

Good general purpose product for many years. The longer collet with a lower angle provides good grip force. The design uses an acme thread to give strength to the clamping nut thread. The result is good durability but will not center the nut providing a large mass variable for balance. Suitable for larger drills at lower RPM's.

> Double-Angle Collet Chuck System

Two separate clamping angles allow significant error between the collet and the collet seat. This results in poor concentricity and poor grip force. The nose diameter of the Extension style gives the best radial clearance of any system. The price is extremely low, but the value is not good based on minimum control of tolerance and lack of performance.

TOOLHOLDING SELECTION GUIDE

Parlec features a diverse product range of traditional toolholding solutions, including: ER Collet Chucks, Shrink Fit Holders, Power Milling Chucks, Shell Mill Holders Single-Angle Collet Systems, Double-Angle Collet Systems, and Weldon End Mill Holders. Our products are manufactured to maintain precision, functionality and durability for traditional and high-speed operation.



ERos® Collet Chuck > EXTREME PERFORMANCE > RPM > 3 MICRON > AD/B > COOLANT

For extreme performance and any high speed, high concentricity tool requirement. The .00012" gage runout tolerance at 3X the tool diameter with the balanced and aerodynamic design, provides the highest performance available equal to shrink fit or proprietary designs without high start-up costs. The collet based design provides the simplest solution to extreme performance requirements.



ER Collet Chuck > SIMULFIT > RPM > 5 MICRON > 12 MICRON > AD/B > COOLANT

For most drilling and lighter higher speed milling applications. Very good concentricity and very good balance. Safe operational speed as high as 30,000 rpm. Larger sizes have a limit based on centrifugal forces.



Shrink Fit Holders > EXTREME PERFORMANCE > RPM > 3 MICRON > AD/B > COOLANT

For nominal size drilling with higher speed and higher feed milling applications. Excellent concentricity and excellent balance. No moving features, and thin nose diameters, make it exceptional for high speed machining. Safe operating speeds are extremely high due to little impact from centrifugal forces.



Power Milling Chucks > SIMULFIT > RPM > 5 MICRON > TRADITIONAL > COOLANT

For precision in moderate and lower speed milling and nominal drilling applications. Very good concentricity and good side load capability. Movable large clamping nut restricts the balance and centrifugal force capability, limiting the speed to 8,000 to 12,000 rpm.



Shell Mill Holders

SIMULFIT

AD/B

COOLANT

For use with indexable shell mill cutters. For both heavy duty and high speed applications. Available with coolant through options.



Single-Angle Collet System

12 MICRON

TRADITIONAL

AD/B

COOLANT

For heavy drilling and some milling applications. The system provides good concentricity and good grip force. The nut system does not lend itself for good balance considerations at higher speeds.



Double-Angle Collet System

TRADITIONAL

AD/B

COOLANT

For smaller drilling application where clearance is necessary. The system is the simplest to use but lacks the characteristics for concentricity and grip force. Not suitable for precision high speed applications.



Weldon End Mill Holders

SIMULFIT

TRADITIONAL

AD/B

COOLANT

For heavy machining using tools with Weldon flats. The side lock design compromises concentricity and is not usable in higher speed applications. The positive drive of the screw is unmatched for force to prevent slippage and pull out in heavy roughing applications.

OTHER PRODUCTION SYSTEMS



Stub Arbors



Morse Taper Holders



Jacobs Taper Holders



Boring Heads



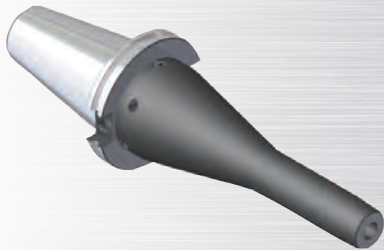
Probe Holders

PARLEC DELIVERS SO YOU CAN DELIVER.



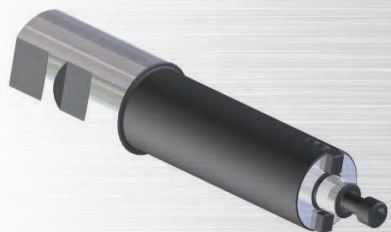
HSK Programs - HSK 63 Form A and HSK 100 Form A Blanks

- Custom second ends for shrink fit, end mill and shell mill holders, collet chucks, aerospace configurations, etc.
- Projections ranging from 2-300 mm and wide variety of coolant delivery features.
- Pre-balanced and balanceable designs available.



CAT Programs - CAT 40 CAT 50 Blanks

- Custom second ends for shrink fit, shell mill holders, end mill holders, ER, single angle and double angle collet chucks, stub arbors, and aerospace applications.
- Projections ranging from 2-300 mm and wide variety of coolant delivery features.
- Pre-balanced and balanceable designs available.



Custom Programs

If your outgoing tool requirements are outside those listed above please consult with the Parlec Technical Sales Manager in your area or a Parlec Product Specialist who will assist you in qualifying for a custom program.

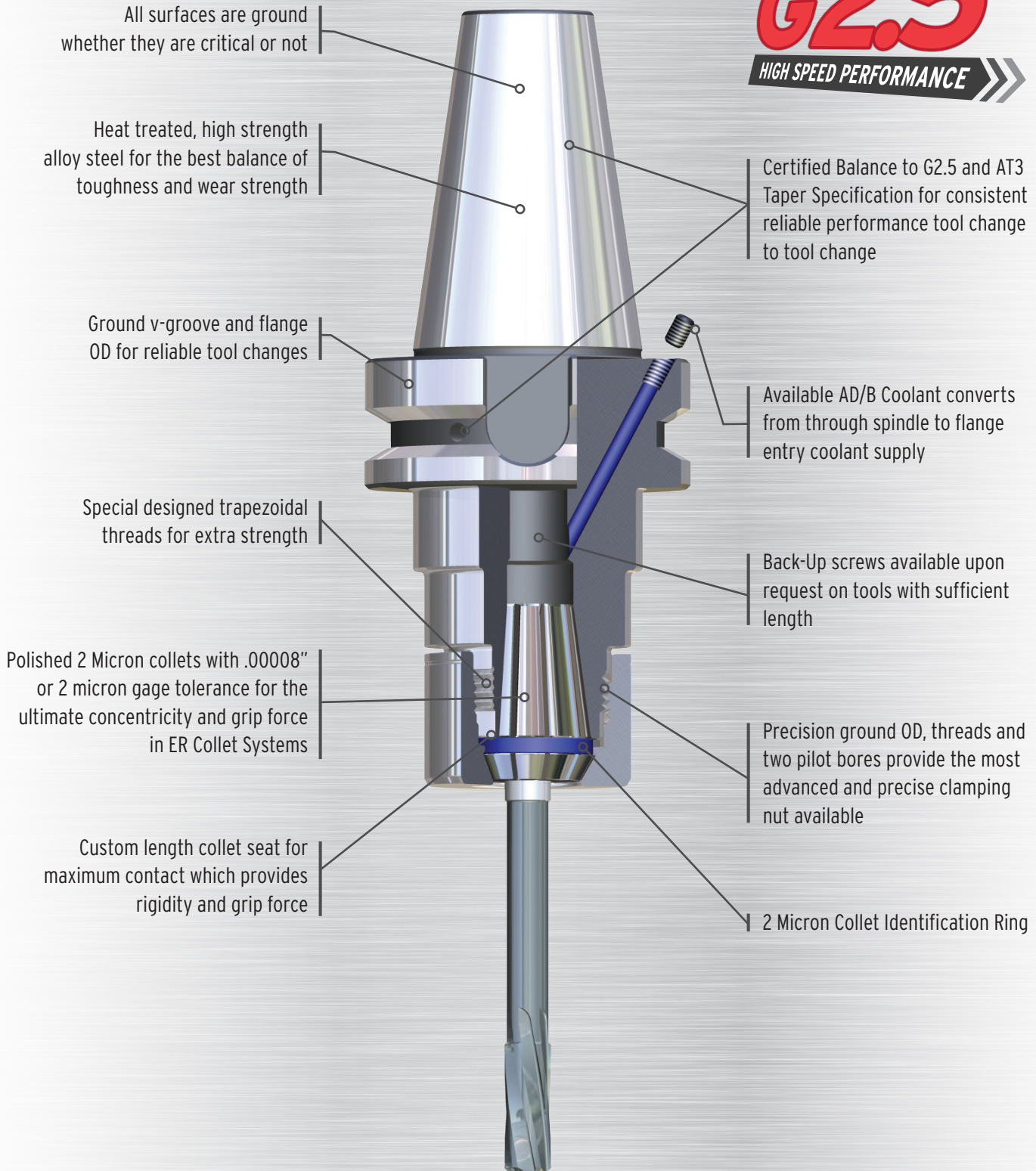


ERoS[®] COLLET CHUCKS:

- Concentricity to 3 microns at 3X diameter
- Affordable precision machining investment
 - Simplicity without the requirement of assembly machines
 - Versatility, suitable for drilling, milling, reaming and grinding
- High speed capability to over 30,000 rpm

PARLEC ERos[®] SYSTEM FEATURES

CERTIFIED
G2.5
HIGH SPEED PERFORMANCE >>>



ERos[®] Collet Chucks

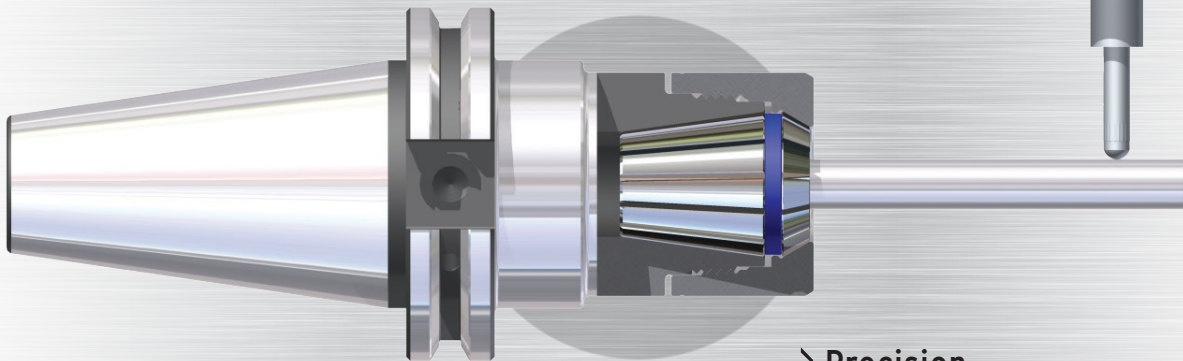
High Precision Toolholding Solutions

17

ERos[®] IS AN EXTREMELY HIGH PRECISION, HIGH GRIP FORCE SOLUTION THAT DOESN'T REQUIRE AN EXPENSIVE HEAT SHRINK OR CLAMPING MACHINE.

> Concentricity

The ERos[®] collet system is one of the best collet chucks that money can buy. The 2 Micron collet combined with the precision chuck, achieves a system accuracy of $\leq .00012''$ or 3 Microns. This level of accuracy is the best available in the world.



> Precision

The extreme performance of the ERos[®] system is a result of extremely tight manufacturing tolerances. The extreme precision is achieved by exceeding the already tight specifications of the ISO 15488.

LOW START UP COST



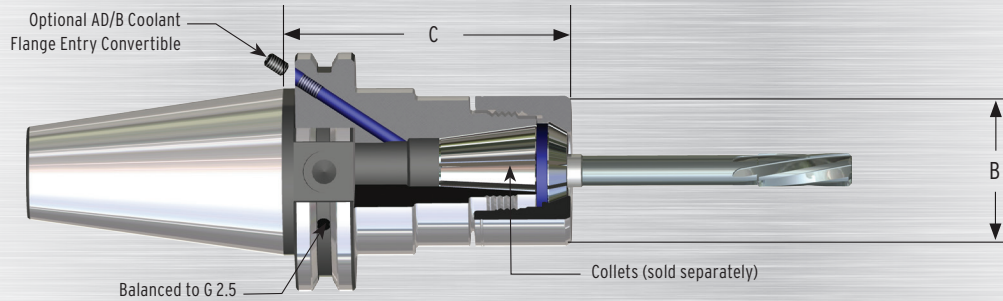
VS.



> Simplicity

The price to performance ratio in the ERos[®] system is the best available. Based on precision, holding force and flexibility, it performs at levels equal to or higher than systems with expensive start up costs such as heat shrink or clamping machines. And individually equal to or less expensive. The relatively low cost of the 2 Micron collets allow inexpensive retooling compared to hydraulics, shrink or proprietary systems. ERos[®] is a combination of quality, precision and technology yielding an EXTREME performance chuck at an attainable price point without need for significant investment for assembly/disassembly equipment.

ERos[®] COLLET CHUCKS



BT TAPER WITH THROUGH COOLANT

BT 30 BALANCED UP TO 25,000 RPM

Size	Part Number	B (Dia.)	C	Collet Nut (Incl.)	Roller Wrench (Opt.)	Torque Wrench (Opt.)	Torque Wrench Nose (Opt.)
ERos11	BT30-11EROSM196	.63	1.96	EROS11MN	EROS11MNW	EROSTW50	EROS11MTWN
	BT30-11EROSM394		3.94				
ERos16	BT30-16EROS196	1.18	1.96	EROS16N	EROS16NW	EROSTW100	EROS16TWN
	BT30-16EROS354		3.54				
	BT30-16EROS472		4.72				
ERos25	BT30-25EROS295	1.57	2.95	EROS25N	EROS25NW	EROSTW200	EROS25TWM
ERos20	BT30-20EROS295	1.26	2.95	EROS20N	EROS20NW	EROSTW100	EROS20TWN
ERos32	BT30-32EROS236	1.97	2.36	EROS32N	EROS32NW	EROSTW200	EROS32TWN
	BT30-32EROS354		3.54				

BT 40 BALANCED UP TO 25,000 RPM

Size	Part Number	B (Dia.)	C	Collet Nut (Incl.)	Roller Wrench (Opt.)	Torque Wrench (Opt.)	Torque Wrench Nose (Opt.)
ERos16	BT40-16EROS295	1.18	2.95	EROS16N	EROS16NW	EROSTW100	EROS16TWN
ERos40	BT40-40EROS394	2.48	3.94	EROS40N	EROS40NW	EROSTW300	EROS40TWN

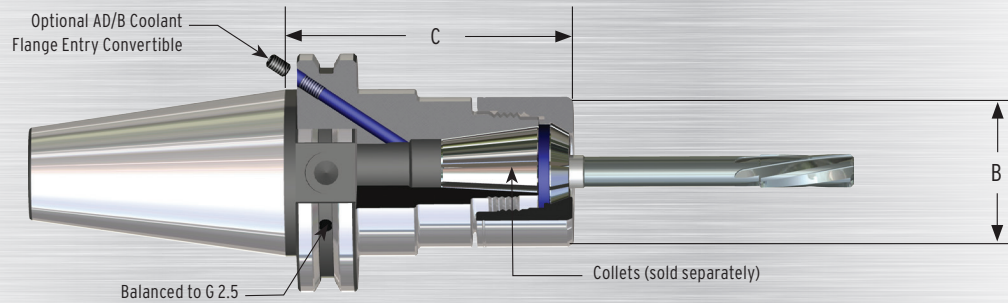
BT TAPER WITH AD/B COOLANT

BT 40 BALANCED UP TO 25,000 RPM

Size	Part Number	B (Dia.)	C	Collet Nut (Incl.)	Roller Wrench (Opt.)	Torque Wrench (Opt.)	Torque Wrench Nose (Opt.)
ERos11	BT40BC-11EROSM295	0.63	2.95	EROS11MN	EROS11MNW	EROSTW50	EROS11MTWN
	BT40BC-11EROSM394		3.94				
ERos16	BT40BC-16EROSM472	0.86	4.72	EROS16MSN	EROS16MSNW	EROSTW100	EROS16MSTWN
	BT40BC-16EROS394		3.94				
	BT40BC-16EROS630		6.30	EROS16N	EROS16NW		EROS16TWN
ERos20	BT40BC-20EROS295	1.26	2.95	EROS20N	EROS20NW	EROSTW200	EROS20TWN
	BT40BC-20EROS472		4.72				
ERos25	BT40BC-25EROS275	1.57	2.75	EROS25N	EROS25NW	EROSTW200	EROS25TWM
ERos32	BT40BC-32EROS275	1.97	2.75	EROS32N	EROS32NW	EROSTW200	EROS32TWN
	BT40BC-32EROS472		4.72				

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

ERos® COLLET CHUCKS



CAT TAPER WITH AD/B COOLANT

CAT 40 BALANCED UP TO 25,000 RPM

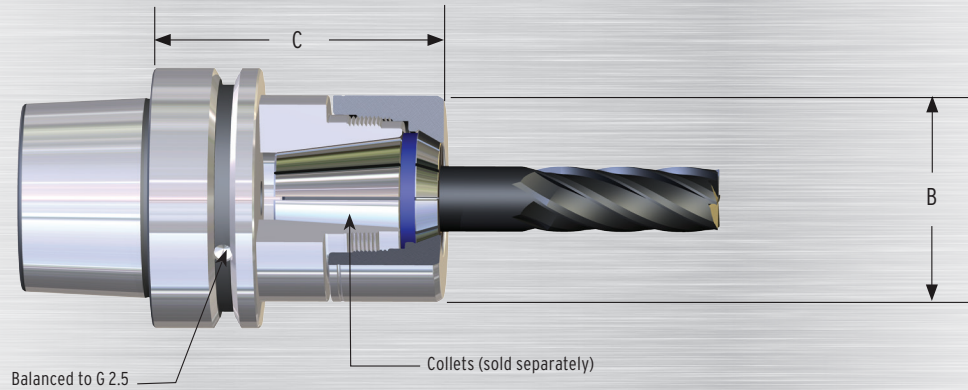
Size	Part Number	B (Dia.)	C	Collet Nut (Incl.)	Roller Wrench (Opt.)	Torque Wrench (Opt.)	Torque Wrench Nose (Opt.)
ERos11	C40BC-11EROSM400	0.63	4.00	EROS11MN	EROS11MNW	EROSTW50	EROS11MTWN
	C40BC-16EROS250		2.50				
ERos16	C40BC-16EROS400	1.18	4.00	EROS16N	EROS16NW	EROSTW100	EROS16TWN
	C40BC-16EROS500		5.00				
ERos20	C40BC-20EROS300	1.26	3.00	EROS20N	EROS20NW		EROS20TWN
	C40BC-20EROS400		4.00				
ERos25	C40BC-25EROS300	1.57	3.00	EROS25N	EROS25NW	EROSTW200	EROS25TWM
	C40BC-25EROS400		4.00				
ERos32	C40BC-32EROS300	1.97	3.00	EROS32N	EROS32NW	EROSTW200	EROS32TWN
	C40BC-32EROS400		4.00				
	C40BC-32EROS600		6.00				
ERos40	C40BC-40EROS400	2.48	4.00	EROS40N	EROS40NW	EROSTW300	EROS40TWN

CAT 50 BALANCED UP TO 20,000 RPM

Size	Part Number	B (Dia.)	C	Collet Nut (Incl.)	Roller Wrench (Opt.)	Torque Wrench (Opt.)	Torque Wrench Nose (Opt.)
ERos16	C50BC-16EROS400	1.18	4.00	EROS16N	EROS16NW	EROSTW100	EROS16TWN
	C50BC-16EROS600		6.00				
ERos20	C50BC-20EROS400	1.26	4.00	EROS20N	EROS20NW		EROS20TWN
	C50BC-20EROS600		6.00				
ERos25	C50BC-25EROS400	1.57	4.00	EROS25N	EROS25NW	EROSTW200	EROS25TWM
ERos32	C50BC-32EROS400	1.97	4.00	EROS32N	EROS32NW	EROSTW200	EROS32TWN
	C50BC-32EROS600		6.00				
ERos40	C50BC-40EROS400	2.48	4.00	EROS40N	EROS40NW	EROSTW300	EROS40TWN
	C50BC-40EROS600		6.00				

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

ERos[®] COLLET CHUCKS



HSK TAPER WITH THROUGH COOLANT

HSK 32 FORM E BALANCED UP TO 30,000 RPM

Size	Part Number	B (Dia.)	C	Collet Nut (Incl.)	Roller Wrench (Opt.)	Torque Wrench (Opt.)	Torque Wrench Nose (Opt.)
ERos16	H32E-16EROSMS215	0.86	2.15	EROS16MSN	EROS16MSNW	EROSTW100	EROS16MSTWN

HSK 40 FORM E BALANCED UP TO 30,000 RPM

Size	Part Number	B (Dia.)	C	Collet Nut (Incl.)	Roller Wrench (Opt.)	Torque Wrench (Opt.)	Torque Wrench Nose (Opt.)
ERos11M	H40E-11EROS196	0.63	1.96	EROS11MN	EROS11MNBW	EROSTW50	EROS11MTWN
ERos16M	H40E-16EROSM216	0.86	2.16	EROS16MSN	EROS16MSNW	EROSTW100	EROS16MSTWN
	H40E-16EROSM394	0.86	3.94				
ERos25	H40E-25EROS236	1.57	2.36	EROS25N	EROS25NBW	EROSTW200	EROS25TWM

HSK 32 FORM A BALANCED UP TO 30,000 RPM

Size	Part Number	B (Dia.)	C	Collet Nut (Incl.)	Roller Wrench (Opt.)	Torque Wrench (Opt.)	Torque Wrench Nose (Opt.)
ERos20	H32A-20EROS196	1.26	1.96	EROS20N	EROS20NBW	EROSTW100	EROS20TWN

HSK 40 FORM A BALANCED UP TO 30,000 RPM

Size	Part Number	B (Dia.)	C	Collet Nut (Incl.)	Roller Wrench (Opt.)	Torque Wrench (Opt.)	Torque Wrench Nose (Opt.)
ERos11M	H40A-11EROSM236	0.63	2.36	EROS11MN	EROS11MNBW	EROSTW50	EROS11MTWN
ERos16M	H40A-16EROS236	1.18	2.36	EROS16N	EROS16NBW	EROSTW100	EROS16TWN

HSK 50 FORM A BALANCED UP TO 30,000 RPM

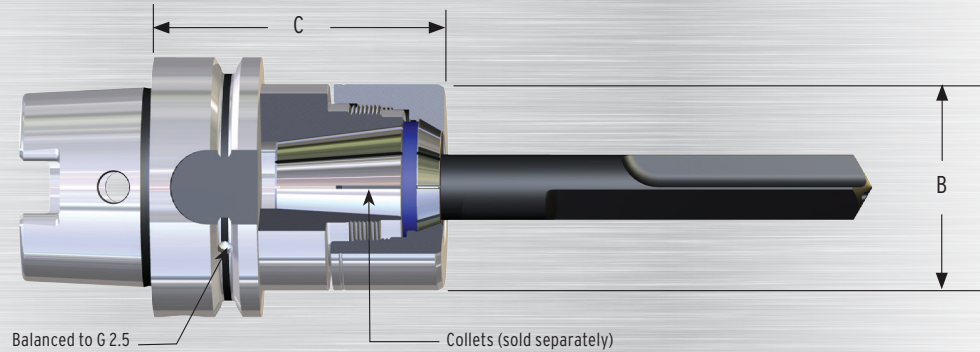
Size	Part Number	B (Dia.)	C	Collet Nut (Incl.)	Roller Wrench (Opt.)	Torque Wrench (Opt.)	Torque Wrench Nose (Opt.)
ERos11M	H50A-11EROSM511	0.63	5.11	EROS11MN	EROS11MNBW	EROSTW50	EROS11MTWN
ERos16MT	H50A-16EROST394	0.94	3.94	EROS16MTN	EROS16MNBW	EROSTW100	EROS16MTWN
	H50A-16EROST511	0.94	5.11				
ERos25	H50A-25EROS275	1.57	2.75	EROS25N	EROS25NBW	EROSTW200	EROS25TWM

HSK 63 FORM F BALANCED UP TO 30,000 RPM

Size	Part Number	B (Dia.)	C	Collet Nut (Incl.)	Roller Wrench (Opt.)	Torque Wrench (Opt.)	Torque Wrench Nose (Opt.)
ERos32	H63F-32EROS255	1.97	2.55	EROS32N	EROS32NBW	EROSTW200	EROS32TWN

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

ERos[®] COLLET CHUCKS



HSK TAPER WITH THROUGH COOLANT

HSK 63 FORM A BALANCED UP TO 25,000 RPM

Size	Part Number	B (Dia.)	C	Collet Nut (Incl.)	Roller Wrench (Opt.)	Torque Wrench (Opt.)	Torque Wrench Nose (Opt.)
EROS 11	H63A-11EROSM275	0.63	2.75	EROS11MN	EROS11MNW	EROSTW50	EROS11TWN
	H63A-11EROSM511		5.11				
	H63A-16EROSM511	0.86		EROS16MSN	EROS16MSNW		EROS16MSTWN
EROS 16	H63A-16EROS216	1.18	2.16	EROS16N	EROS16NW	EROSTW100	EROS16TWN
	H63A-16EROS394		3.94				
	H63A-16EROS630		6.30				
EROS 20	H63A-20EROS236	1.26	2.36	EROS20N	EROS20NW	EROSTW100	EROS20TWN
	H63A-20EROS394		3.94				
ERos25	H63A-25EROS236	1.57	2.36	EROS25N	EROS25NW	EROSTW200	EROS25TWM
	H63A-25EROS394		3.94				
EROS 32	H63A-32EROS275	1.97	2.75	EROS32N	EROS32NW	EROSTW200	EROS32TWN
	H63A-32EROS394		3.94				
EROS 40	H63A-32EROS630	2.48	6.30	EROS40N	EROS40NW	EROSTW300	EROS40TWN
	H63A-40EROS314		3.14				

HSK 100 FORM A BALANCED UP TO 20,000 RPM

Size	Part Number	B (Dia.)	C	Collet Nut (Incl.)	Roller Wrench (Opt.)	Torque Wrench (Opt.)	Torque Wrench Nose (Opt.)
EROS 16	H100A-16EROS394	1.18	3.94	EROS16N	EROS16NW	EROSTW100	EROS16TWN
	H100A-16EROS630		6.30				
ERos25	H100A-25EROS394	1.57	3.94	EROS25N	EROS25NW	EROSTW200	EROS25TWM
	H100A-32EROS394		3.94				
EROS 32	H100A-32EROS630	1.97	6.30	EROS32N	EROS32NW	EROSTW100	EROS32TWN
	H100A-32EROS787		7.87				
EROS 40	H100A-40EROS394	2.48	3.94	EROS40N	EROS40NW	EROSTW300	EROS40TWN

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

COLLET SELECTION

ERos 2 Micron Collet	<ul style="list-style-type: none"> ■ For use in ERos collet chucks for drilling, reaming, boring, tapping, and milling. ■ Compatible with ISO 15488-B. ■ Runout of taper to ID less than 2 microns. ■ Identification band for easy reference. ■ Can be used in a standard ER collet system by removing the identification band. ■ Coated to prevent corrosion.
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COLLET SELECTION WITH COOLANT OPTIONS

ERos 2 Micron Coolant Sealed Collet	<ul style="list-style-type: none"> ■ For use with high precision ERos toolholders. ■ Seals coolant pressure up to 800 psi.
ERos 2 MICRON COOLANT JET Collet	<ul style="list-style-type: none"> ■ * Delivers high pressure coolant via coolant ports to flush chips directly at the cutting edge.



EROS 2 Micron Collet



EROS 2 Micron Coolant Sealed Collet



EROS 2 Micron Coolant Jet Collet

EROS COLLET SIZE	ER11	ER16	ER20	ER32	ER40
LENGTH (L)	0.708	1.082	1.240	1.574	1.811
DIAMETER (D)	0.452	0.669	0.827	1.300	1.614

ERos[®] 2 MICRON COLLET

EROS 11 INCH

Part Number	Size
EROS11-1/16	1/16"
EROS11-1/8	1/8"
EROS11-3/16	3/16"
EROS11-1/4	1/4"

EROS 11 INCH SET

PART NUMBER	EROS11-SI004
NUMBER OF PIECES	4 PIECES
RANGE	1/16" - 1/4"

EROS 11 METRIC

EROS11-1MM	1 mm
EROS11-1.5MM	1.5 mm
EROS11-2MM	2 mm
EROS11-2.5MM	2.5 mm
EROS11-3MM	3 mm
EROS11-3.5MM	3.5 mm
EROS11-4MM	4 mm
EROS11-4.5MM	4.5 mm
EROS11-5MM	5 mm
EROS11-5.5MM	5.5 mm
EROS11-6MM	6 mm
EROS11-6.5MM	6.5 mm
EROS11-7MM	7 mm

EROS 11 METRIC SET

PART NUMBER	EROS11-S013
NUMBER OF PIECES	13 PIECES
RANGE	1 - 7 mm

EROS 16 INCH

EROS16-1/8	1/8"
EROS16-5/32	5/32"
EROS16-3/16	3/16"
EROS16-7/32	7/32"
EROS16-1/4	1/4"
EROS16-9/32	9/32"
EROS16-5/16	5/16"
EROS16-3/8	3/8"

EROS 16 INCH SET

PART NUMBER	EROS16-SI008
NUMBER OF PIECES	8 PIECES
RANGE	1/8" - 3/8"

EROS 16 METRIC

EROS16-3MM	3 mm
EROS16-4MM	4 mm
EROS16-5MM	5 mm
EROS16-6MM	6 mm
EROS16-7MM	7 mm
EROS16-8MM	8 mm
EROS16-9MM	9 mm
EROS16-10MM	10 mm

EROS 16 METRIC SET

PART NUMBER	EROS16-S008
NUMBER OF PIECES	8 PIECES
RANGE	3 - 10 mm

EROS 20 INCH

EROS20-1/8	1/8"
EROS20-3/16	3/16"
EROS20-1/4	1/4"
EROS20-5/16	5/16"
EROS20-3/8	3/8"
EROS20-7/16	7/16"
EROS20-1/2	1/2"

EROS 20 INCH SET

PART NUMBER	EROS20-SI007
NUMBER OF PIECES	7 PIECES
RANGE	1/8" - 1/2"

EROS 20 METRIC

EROS20-3MM	3 mm
EROS20-4MM	4 mm
EROS20-5MM	5 mm
EROS20-6MM	6 mm
EROS20-7MM	7 mm
EROS20-8MM	8 mm
EROS20-9MM	9 mm
EROS20-10MM	10 mm
EROS20-11MM	11 mm
EROS20-12MM	12 mm
EROS20-13MM	13 mm

EROS 20 METRIC SET

PART NUMBER	EROS20-S011
NUMBER OF PIECES	11 PIECES
RANGE	3-13 mm

EROS 25 INCH

EROS25-1/8	1/8"
EROS25-3/16	3/16"
EROS25-1/4	1/4"
EROS25-5/16	5/16"
EROS25-3/8	3/8"
EROS25-7/16	7/16"
EROS25-1/2	1/2"
EROS25-9/16	9/16"
EROS25-5/8	5/8"

EROS 25 INCH SET

PART NUMBER	EROS25-S009
NUMBER OF PIECES	9 PIECES
RANGE	1/8"-5/8"

EROS 25 METRIC

EROS25-3MM	3 mm
EROS25-4MM	4 mm
EROS25-5MM	5 mm
EROS25-6MM	6 mm
EROS25-7MM	7 mm
EROS25-8MM	8 mm
EROS25-9MM	9 mm
EROS25-10MM	10 mm
EROS25-11MM	11 mm
EROS25-12MM	12 mm
EROS25-13MM	13 mm
EROS25-14MM	14 mm
EROS25-15MM	15 mm
EROS25-16MM	16 mm

EROS 25 METRIC SET

PART NUMBER	EROS25-S014
NUMBER OF PIECES	14 PIECES
RANGE	3-16 mm

EROS 32 INCH

EROS32-1/8	1/8"
EROS32-3/16	3/16"
EROS32-1/4	1/4"
EROS32-5/16	5/16"
EROS32-3/8	3/8"
EROS32-7/16	7/16"
EROS32-1/2	1/2"
EROS32-9/16	9/16"
EROS32-5/8	5/8"
EROS32-3/4	3/4"

EROS 32 INCH SET

PART NUMBER	EROS32-SI010
NUMBER OF PIECES	10 PIECES
RANGE	1/8" - 3/4"

EROS 32 METRIC

EROS32-SI010	3 mm
EROS32-4MM	4 mm
EROS32-5MM	5 mm
EROS32-6MM	6 mm
EROS32-7MM	7 mm
EROS32-8MM	8 mm
EROS32-9MM	9 mm
EROS32-10MM	10 mm
EROS32-11MM	11 mm
EROS32-12MM	12 mm
EROS32-13MM	13 mm
EROS32-14MM	14 mm
EROS32-15MM	15 mm
EROS32-16MM	16 mm
EROS32-17MM	17 mm
EROS32-18MM	18 mm
EROS32-19MM	19 mm
EROS32-20MM	20 mm

EROS 32 METRIC SET

PART NUMBER	EROS32-S018
NUMBER OF PIECES	18 PIECES
RANGE	3 - 20 mm

EROS 40 INCH

EROS40-3/8	3/8"
EROS40-1/2	1/2"
EROS40-5/8	5/8"
EROS40-3/4	3/4"
EROS40-7/8	7/8"
EROS40-1	1"

EROS 40 INCH SET

PART NUMBER	EROS40-SI006
NUMBER OF PIECES	6 PIECES
RANGE	3/8" - 1"

EROS 40 METRIC

EROS40-10MM	10 mm
EROS40-11MM	11 mm
EROS40-12MM	12 mm
EROS40-13MM	13 mm
EROS40-14MM	14 mm
EROS40-15MM	15 mm
EROS40-16MM	16 mm
EROS40-17MM	17 mm
EROS40-18MM	18 mm
EROS40-19MM	19 mm
EROS40-20MM	20 mm
EROS40-21MM	21 mm
EROS40-22MM	22 mm
EROS40-23MM	23 mm
EROS40-24MM	24 mm
EROS40-25MM	25 mm
EROS40-26MM	26 mm

EROS 40 METRIC SET

PART NUMBER	EROS40-S017
NUMBER OF PIECES	17 PIECES
RANGE	10-26 mm

ERos[®] 2 MICRON COOLANT SEALED COLLET

EROS 11 INCH

Part Number	Size
EROSC11-1/8	1/8"
EROSC11-3/16	3/16"
EROSC11-1/4	1/4"

EROS 11 METRIC

Part Number	Size
EROSC11-3MM	3 mm
EROSC11-4MM	4 mm
EROSC11-5MM	5 mm
EROSC11-6MM	6 mm

EROS 16 INCH

Part Number	Size
EROSC16-1/8	1/8"
EROSC16-3/16	3/16"
EROSC16-1/4	1/4"
EROSC16-5/16	5/16"
EROSC16-3/8	3/8"

EROS 16 INCH SET

PART NUMBER	EROSC16-S1005
NUMBER OF PIECES	8 PIECES
RANGE	1/8", 3/16", 1/4", 5/16", 3/8"

EROS 16 METRIC

Part Number	Size
EROSC16-3MM	3 mm
EROSC16-4MM	4 mm
EROSC16-5MM	5 mm
EROSC16-6MM	6 mm
EROSC16-7MM	7 mm
EROSC16-8MM	8 mm
EROSC16-9MM	9 mm
EROSC16-10MM	10 mm

EROS 16 METRIC SET

PART NUMBER	EROSC16-S005
NUMBER OF PIECES	5 PIECES
RANGE	3 mm, 4 mm, 6 mm, 8 mm, 10 mm

PART NUMBER	EROSC16-S008
NUMBER OF PIECES	8 PIECES
RANGE	3 mm, 4 mm, 5 mm, 6 mm, 7 mm, 8 mm, 9 mm, 10 mm

EROS 20 INCH

Part Number	Size
EROSC20-1/4	1/4"
EROSC20-5/16	5/16"
EROSC20-3/8	3/8"
EROSC20-1/2	1/2"

EROS 20 INCH SET

PART NUMBER	EROSC20-S1004
NUMBER OF PIECES	4 PIECES
RANGE	1/4", 5/16", 3/8", 1/2"

EROS 20 METRIC

Part Number	Size
EROSC20-3MM	3 mm
EROSC20-4MM	4 mm
EROSC20-5MM	5 mm
EROSC20-6MM	6 mm
EROSC20-7MM	7 mm
EROSC20-8MM	8 mm
EROSC20-10MM	10 mm
EROSC20-12MM	12 mm

EROS 20 METRIC SET

PART NUMBER	EROSC20-S006
NUMBER OF PIECES	6 PIECES
RANGE	3 mm, 4 mm, 6 mm, 8 mm, 10 mm, 12 mm

EROS 25 INCH

Part Number	Size
EROSC25-1/8	1/8"
EROSC25-3/16	3/16"
EROSC25-1/4	1/4"
EROSC25-5/16	5/16"
EROSC25-3/8	3/8"
EROSC25-7/16	7/16"
EROSC25-1/2	1/2"
EROSC25-9/16	9/16"
EROSC25-5/8	5/8"

EROS 25 INCH SET

PART NUMBER	EROSC25-S009
NUMBER OF PIECES	9 PIECES
RANGE	1/8"-5/8"

EROS 25 METRIC

Part Number	Size
EROSC25-3MM	3 mm
EROSC25-4MM	4 mm
EROSC25-5MM	5 mm
EROSC25-6MM	6 mm
EROSC25-7MM	7 mm
EROSC25-8MM	8 mm
EROSC25-9MM	9 mm
EROSC25-10MM	10 mm
EROSC25-11MM	11 mm
EROSC25-12MM	12 mm
EROSC25-13MM	13 mm
EROSC25-14MM	14 mm
EROSC25-15MM	15 mm
EROSC25-16MM	16 mm

EROS 25 METRIC SET

PART NUMBER	EROSC25-S014
NUMBER OF PIECES	14 PIECES
RANGE	3-16 mm

EROS 32 INCH

Part Number	Size
EROSC32-1/4	1/4"
EROSC32-5/16	5/16"
EROSC32-3/8	3/8"
EROSC32-1/2	1/2"
EROSC32-9/16	9/16"
EROSC32-5/8	5/8"
EROSC32-3/4	3/4"

EROS 32 INCH SET

PART NUMBER	EROSC32-S1006
NUMBER OF PIECES	6 PIECES
RANGE	1/4", 5/16", 3/8", 1/2", 5/8", 3/4"

EROS 32 METRIC

Part Number	Size
EROSC32-3MM	3 mm
EROSC32-4MM	4 mm
EROSC32-5MM	5 mm
EROSC32-6MM	6 mm
EROSC32-8MM	8 mm
EROSC32-10MM	10 mm
EROSC32-11MM	11 mm
EROSC32-12MM	12 mm
EROSC32-13MM	13 mm
EROSC32-14MM	14 mm
EROSC32-15MM	15 mm
EROSC32-16MM	16 mm
EROSC32-18MM	18 mm
EROSC32-20MM	20 mm

EROS 32 INCH SET

PART NUMBER	EROSC32-S009
NUMBER OF PIECES	9 PIECES
RANGE	4 mm, 6 mm, 8 mm, 10 mm, 12 mm, 14 mm, 16 mm, 18 mm, 20 mm

PART NUMBER	EROSC32-S012
NUMBER OF PIECES	12 PIECES
RANGE	4 mm, 6 mm, 8 mm, 10 mm, 11 mm, 12 mm, 13 mm, 14 mm, 15 mm, 16 mm, 18 mm, 20 mm

EROS 40 INCH

Part Number	Size
EROSC40-1/2	1/2"
EROSC40-5/8	5/8"
EROSC40-3/4	3/4"
EROSC40-1/2	1"

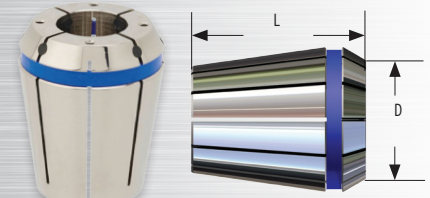
EROS 40 METRIC

Part Number	Size
EROSC40-16MM	16 mm
EROSC40-20MM	20 mm
EROSC40-25MM	25 mm

ERos[®] Collet Chucks

High Precision Toolholding Solutions

ERos[®] 2 MICRON COOLANT JET COLLET



ERos[®] 2 Micron
Coolant Jet Collet

*For specifications see page 22.

EROS 16 INCH

Part Number	Size
EROSCJ16-1/8	1/8"
EROSCJ16-1/4	1/4"

EROS 16 METRIC

EROSCJ16-4MM	4 mm
EROSCJ16-6MM	6 mm

EROS 32 INCH

Part Number	Size
EROSCJ32-1/4	1/4"
EROSCJ32-5/16	5/16"
EROSCJ32-3/8	3/8"
EROSCJ32-1/2	1/2"
EROSCJ32-5/8	5/8"
EROSCJ32-3/4	3/4"

EROS 32 METRIC

EROSCJ32-6MM	6 mm
EROSCJ32-8MM	8 mm
EROSCJ32-10MM	10 mm
EROSCJ32-12MM	12 mm
EROSCJ32-14MM	14 mm
EROSCJ32-16MM	16 mm
EROSCJ32-18MM	18 mm
EROSCJ32-20MM	20 mm

EROS 40 INCH

Part Number	Size
EROSCJ40-5/8	5/8"
EROSCJ40-3/4	3/4"
EROSCJ40-1	1"

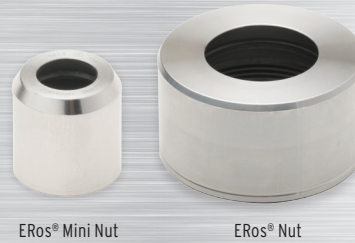
EROS 40 METRIC

EROSCJ40-16MM	16 mm
EROSCJ40-20MM	20 mm
EROSCJ40-25MM	25 mm

ERos® SYSTEM ACCESSORIES

REPLACEMENT NUT

Size	Part Number	Nut Diameter	Maximum Recommended Torque
EROS11M	EROS11MN	0.63 (16 mm)	88 in./lbs. (10 Nm)
EROS16SM	EROS16MSN	0.86 (22 mm)	15 ft./lbs. (20 Nm)
EROS16MT	EROS16MTN	0.94 (24 mm)	
EROS16M	EROS16MN		
EROS16	EROS16N	1.18 (30 mm)	41 ft./lbs. (55 Nm)
EROS20	EROS20N	1.26 (32 mm)	56 ft./lbs. (75 Nm)
EROS25	EROS25N	1.57	68 ft./lbs (90Nm)
EROS32	EROS32N	1.97 (50 mm)	105 ft./lbs. (142 Nm)
EROS40	EROS40N	2.48 (63 mm)	150 ft./lbs. (203 Nm)



ERos® Mini Nut

ERos® Nut

ROLLER WRENCH

Size	Part Number	Nut Diameter
EROS11M	EROS11MNW	0.63 (16 mm)
	EROS16MSNW	0.86 (22 mm)
EROS16	EROS16MNW	0.94 (24 mm)
	EROS16NW	1.18 (30 mm)
EROS20	EROS20NW	1.26 (32 mm)
EROS25	EROS25NW	1.57 (40 mm)
EROS32	EROS32NW	1.97 (50 mm)
EROS40	EROS40NW	2.48 (63 mm)



TORQUE WRENCH

Size	Wrench Part Number	Range	Nose Piece Part Number	Nut Diameter
EROS11M	EROSTW50	5 - 15 ft./lbs.	EROS11MTWN	0.63 (16 mm)
EROS16MS	EROSTW100	7 - 75 ft./lbs.	EROS16MSTWN	0.86 (22 mm)
EROS16M			EROS16MTWN	0.94 (24 mm)
EROS16			EROS16TWN	1.18 (30 mm)
EROS20			EROS20TWN	1.26 (32 mm)
EROS25	EROST200	SAME	EROSTWN25	1.57 (40 mm)
EROS32	EROSTW200	14 - 150 ft./lbs.	EROS32TWN	1.97 (50 mm)
EROS40	EROSTW300	40 - 225 ft./lbs.	EROS40TWN	2.48 (63 mm)



EROS COLLET

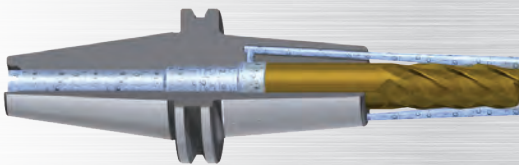
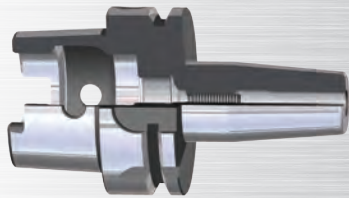
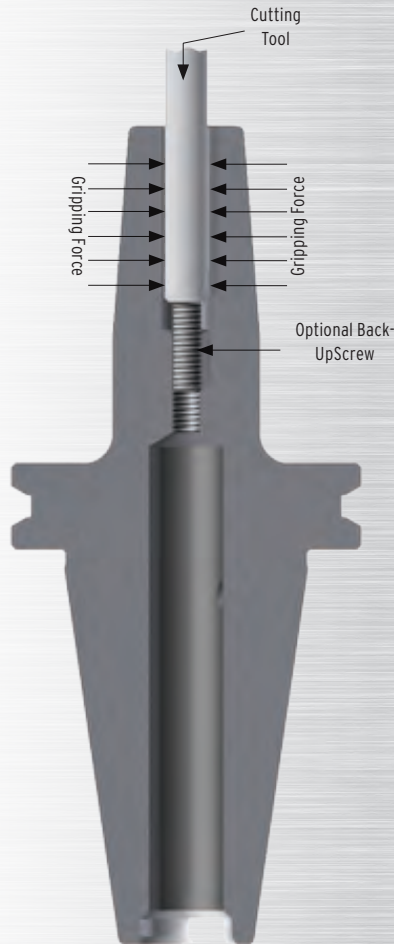
Size	ER11	ER16	ER20	ER25	ER32	ER40
LENGTH (L)	0.708	1.082	1.240	1.338	1.574	1.811
DIAMETER (D)	0.452	0.669	0.827	1.023	1.300	1.614



SHRINKFIT HOLDERS:

- Concentricity to 3 microns at 3X diameter
- High speed capability to over 30,000 rpm
 - Low centrifugal force due to low holder mass
- DIN design for market compatibility
 - Precision machining
- Constructed of double tempered tool steel for exceptional durability

HEAT SHRINK HOLDERS



> For Maximum Gripping Power with Exceptional Concentricity

- The use of Heat Shrink Tooling allows for greater speeds and feeds, better finishes, increased tool life, and increased productivity due to its High Speed Machining capability and simplicity of use.
- Constructed with durable tempered Tool Steel for exceptional durability and cycle life. No mechanical clamping devices are used. With proper use, toolholder life should exceed that of standard End Mill holders.
- Tool is gripping 360°, along the entire length of the bore resulting in an evenly distributed clamping force and increased concentricity.
- Improved balance design with no moving pieces. Low centrifugal forces due to low holder mass.

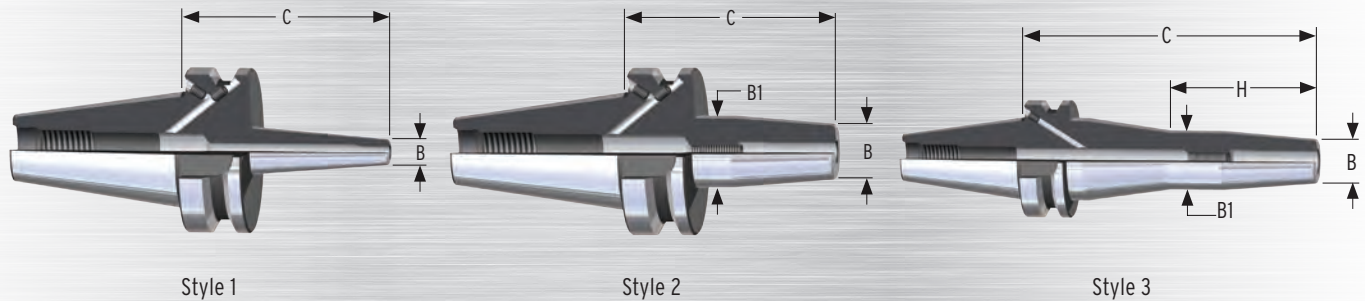
> Technical Specifications

- Standard holders have 4.5° angle nose for compatibility with most heat shrink machines.
- Balanced to G 2.5 at up to 25,000 rpm, refer to charts for each taper size.
- Available from stock in BT, CAT and HSK Tapers. Also available from stock in short and extended lengths. Other lengths, medium and extra-long, available upon request.
- Standard with AD/B coolant entry.
- Concentricity of less than .0001" with tool shrunk in holder.

> Coolant Options

- Coolant through holders require no special backup screws or seals. The interference fit between the ID of the toolholder and cutting tool shank creates the seal, preventing the coolant from flowing anywhere else except through the cutting tool. Coolant grooves and coolant porting also available.

HEAT SHRINK HOLDERS



BT TAPER WITH AD/B COOLANT

BT 40 BALANCED UP TO 25,000 RPM

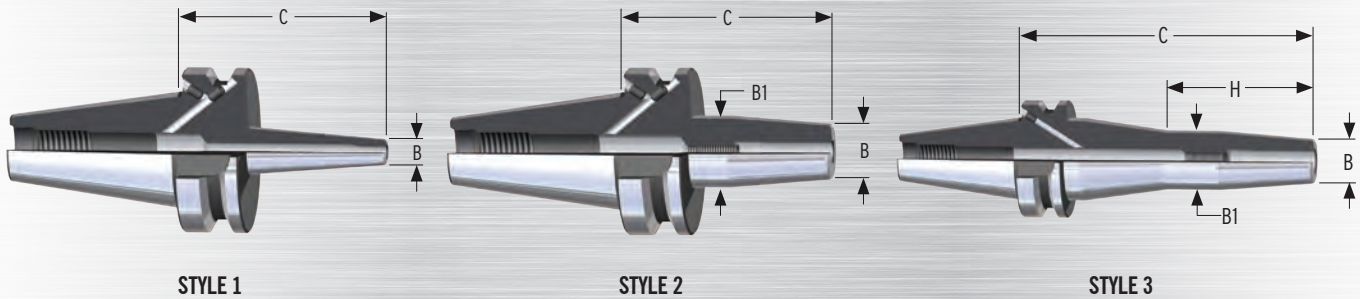
Size	Part Number with Through Coolant	Part Number with Coolant Port	Style	B (Dia.)	B1 (Dia.)	C	Socket Depth	H	Stop Screw (Opt.)
3/16"	BT40-18SF354-9	BT40-18SF354-9C	2	0.39	0.62	3.54	-	-	-
1/4"	BT40-25SF354-9	BT40-25SF354-9C	2	0.83	1.06	3.54	1.33	-	BS-SFM058-16
	BT40-25SF630-9	BT40-25SF630-9C	3			6.30		3.15	
5/16"	BT40-31SF354-9	BT40-31SF354-9C	2	0.94	1.26	3.54	1.45	-	BS-SFM061-16
	BT40-31SF630-9	BT40-31SF630-9C	3			6.30		3.15	
3/8"	BT40-38SF354-9	BT40-38SF354-9C	2	0.94	1.26	3.54	1.69	-	BS-SFM081-16
	BT40-38SF630-9	BT40-38SF630-9C	3			6.30		-	
7/16"	BT40-43SF354-9	BT40-43SF354-9C	2	0.94	1.26	3.54	1.69	-	BS-SFM081-16
	BT40-43SF630-9	-	3			6.30		3.15	
1/2"	BT40-50SF354-9	BT40-50SF354-9C	2	1.06	1.34	3.54	1.85	-	BS-SFM101-20
	BT40-50SF630-9	BT40-50SF630-9C	3			6.30		3.15	
5/8"	BT40-62SF354-9	BT40-62SF354-9C	2	1.06	1.34	3.54	1.97	-	BS-SFM121-20
	BT40-62SF630-9	BT40-62SF630-9C	2			6.30		-	
3/4"	BT40-75SF354-9	BT40-75SF354-9C	2	1.30	1.65	3.54	2.05	-	BS-SFM161-20
	BT40-75SF630-9	BT40-75SF630-9C	2			6.30		-	
7/8"	BT40-88SF354-9	BT40-88SF354-9C	2	1.30	1.65	3.54	2.04	-	BS-SFM161-20
	BT40-88SF630-9	BT40-88SF630-9C	2			6.30		-	
1"	BT40-10SF394-9	BT40-10SF394-9C	2	1.73	2.09	3.94	2.28	-	BS-SFM161-20
	BT40-10SF630-9	BT40-10SF630-9C	2			6.30		-	
1 1/4"	BT40-12SF394-9	BT40-12SF394-9C	2	1.73	2.09	3.94	2.44	-	BS-SFM161-20
	BT40-12SF630-9	BT40-12SF630-9C	2			6.30		-	

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

ShrinkFit Holders

30 High Precision Toolholding Solutions

HEAT SHRINK HOLDERS



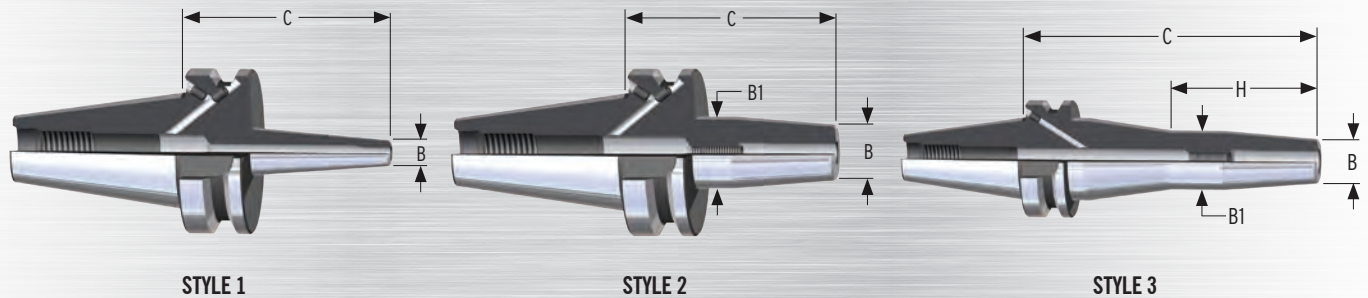
CAT TAPER WITH AD/B COOLANT

CAT 40 BALANCED UP TO 25,000 RPM

Size	Part Number with Through Coolant	Part Number with Coolant Port	Style	B (Dia.)	B1 (Dia.)	C	Socket Depth	H	Stop Screw (Opt.)	
1/8"	C40-01SF315-9	C40-01SF315-9C	2	0.39	0.62	3.15	-	-	-	
3/16"	C40-18SF315-9	C40-18SF315-9C	2		0.72	3.15	-	-	-	
1/4"	C40-25SF315-9	C40-25SF315-9C	2	0.83	1.06	3.15	1.33	-	BS-SFM058-16	
	C40-25SF630-9	C40-25SF630-9C	3			6.30		3.15		
5/16"	C40-31SF315-9	C40-31SF315-9C	2			3.15	1.45	-	BS-SFM061-16	
	C40-31SF630-9	C40-31SF630-9C	3			6.30		3.15		
3/8"	C40-38SF315-9	C40-38SF315-9C	2	0.94	1.26	3.15	1.69	-	BS-SFM081-16	
	C40-38SF630-9	C40-38SF630-9C	3			6.30		3.15		
1/2"	C40-50SF315-9	C40-50SF315-9C	2			3.15	1.85	-	BS-SFM101-20	
	C40-50SF630-9	C40-50SF630-9C	3			6.30		3.15		
5/8"	C40-62SF315-9	C40-62SF315-9C	2	1.06	1.34	3.15	1.97	-	BS-SFM121-20	
	C40-62SF630-9	C40-62SF630-9C	3			6.30		3.15		
3/4"	C40-75SF315-9	C40-75SF315-9C	2	1.30	1.65	3.15	2.05	-	BS-SFM161-20	
	C40-75SF630-9	C40-75SF630-9C	2			6.30		-		
1"	C40-10SF394-9	C40-10SF394-9C	2	1.73	2.09	3.94	2.28	-	BS-SFM161-20	
	C40-10SF630-9	C40-10SF630-9C	2			6.30		-		
1 1/4"	C40-12SF394-9	C40-12SF394-9C	2			3.94	2.44	3.15		-
	C40-12SF630-9	C40-12SF630-9C	2			6.30		-		
6 mm	C40-M06SF80-9	-	2	21	27	80	34	3.15	BS-SFM058-16	
8 mm	C40-M08SF80-9	-	2			80	37	-	BS-SFM061-16	
10 mm	C40-M10SF80-9	-	2	24	32	80	42	-	BS-SFM081-16	
12 mm	C40-M12SF80-9	-	2			80	47	-	BS-SFM101-20	
16 mm	C40-M16SF80-9	-	2	27	34	80	50	3.15	BS-SFM121-20	
20 mm	C40-M20SF80-9	-	2	33	42	80	52	-		
25 mm	C40-M25SF100-9	-	2	44	53	100	58	3.15		
32 mm	C40-M32SF100-9	-	2			100	62	-		

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

HEAT SHRINK HOLDERS



CAT TAPER WITH AD/B COOLANT

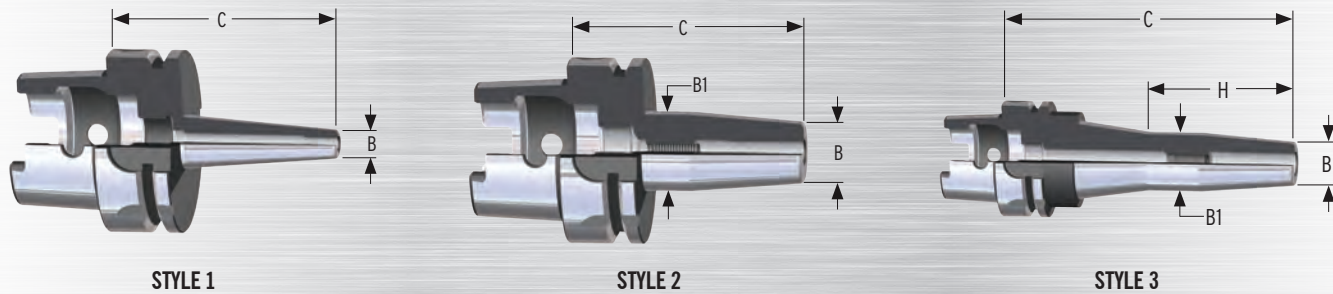
CAT 50 BALANCED UP TO 20,000 RPM

Size	Part Number with Through Coolant	Part Number with Coolant Port	Style	B (Dia.)	B1 (Dia.)	C	Socket Depth	H	Stop Screw (Opt.)
1/4"	C50-25SF315-9	C50-25SF315-9C	2	0.83	1.06	3.15	1.33	-	BS-SFM058-16
	C50-25SF630-9	C50-25SF630-9C	3			6.30		3.15	
5/16"	C50-31SF315-9	C50-31SF315-9C	2	0.94	1.26	3.15	1.45	-	BS-SFM061-16
	C50-31SF630-9	C50-31SF630-9C	3			6.30		3.15	
3/8"	C50-38SF315-9	C50-38SF315-9C	2	1.06	1.34	3.15	1.69	-	BS-SFM081-16
	C50-38SF630-9	C50-38SF630-9C	3			6.30		3.15	
1/2"	C50-50SF315-9	C50-50SF315-9C	2	1.30	1.65	3.15	1.85	-	BS-SFM101-20
	C50-50SF630-9	C50-50SF630-9C	3			6.30		3.15	
5/8"	C50-62SF315-9	C50-62SF315-9C	2	1.73	2.09	3.15	1.97	-	BS-SFM121-20
	C50-62SF630-9	C50-62SF630-9C	3			6.30		3.15	
3/4"	C50-75SF315-9	C50-75SF315-9C	2	21	27	3.15	2.05	-	BS-SFM161-20
	C50-75SF630-9	C50-75SF630-9C	3			6.30		3.15	
1"	C50-10SF394-9	C50-10SF394-9C	2	24	32	3.94	2.28	-	BS-SFM161-20
	C50-10SF630-9	C50-10SF630-9C	2			6.30		-	
1 1/4"	C50-12SF394-9	C50-12SF394-9C	2	27	34	3.94	2.44	-	BS-SFM161-20
	C50-12SF630-9	C50-12SF630-9C	2			6.30		-	
6 mm	C50-M06SF160-9	-	3	33	42	160	50	80	BS-SFM121-20
6 mm	C50-M06SF80-9	-	2			80		-	
8 mm	C50-M08SF160-9	-	3	44	53	160	52	80	BS-SFM161-20
8 mm	C50-M08SF80-9	-	2			80		-	
10 mm	C50-M10SF160-9	-	2	58	62	160	58	-	BS-SFM161-20
10 mm	C50-M10SF80-9	-	2			80		-	
12 mm	C50-M12SF160-9	-	2	53	53	160	62	-	BS-SFM161-20
12 mm	C50-M12SF80-9	-	2			80		-	
16 mm	C50-M16SF160-9	-	3	53	53	160	62	80	BS-SFM161-20
16 mm	C50-M16SF80-9	-	2			80		-	
20 mm	C50-M20SF160-9	-	3	53	53	160	62	80	BS-SFM161-20
20 mm	C50-M20SF80-9	-	2			80		-	
25 mm	C50-M25SF100-9	-	2	53	53	100	62	-	BS-SFM161-20
25 mm	C50-M25SF160-9	-	2			160		-	
32 mm	C50-M32SF100-9	-	2	53	53	100	62	-	BS-SFM161-20
32 mm	C50-M32SF160-9	-	2			160		-	

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

ShrinkFit Holders

HEAT SHRINK HOLDERS



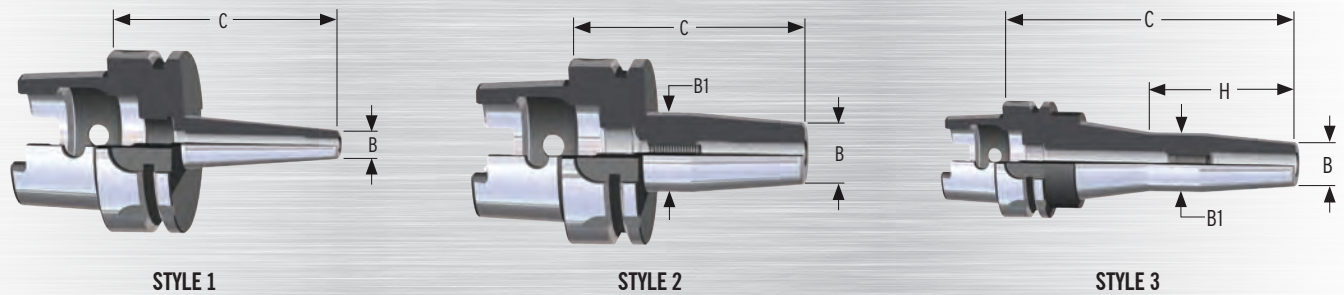
HSK TAPER

HSK 63 FORM A BALANCED UP TO 25,000 RPM

Size	Part Number with Through Coolant	Part Number with Coolant Port	Style	B (Dia.)	B1 (Dia.)	C	Socket Depth	H	Stop Screw (Opt.)		
1/8"	H63A-01SF315-9	H63A-01SF315-9C	2	0.39	0.62	3.15	-	-	-		
3/16"	H63A-18SF315-9	H63A-18SF315-9C	1		-	3.15	-	-	-		
1/4"	H63A-25SF315-9	H63A-25SF315-9C	2	0.83	1.06	3.15	1.33	-	BS-SFM058-16		
	H63A-25SF630-9	H63A-25SF630-9C	2			6.30		-			
5/16"	H63A-31SF315-9	H63A-31SF315-9C	2			3.15	1.45	-	3.15	BS-SFM061-16	
	H63A-31SF630-9	H63A-31SF630-9C	3			6.30		-			
3/8"	H63A-38SF335-9	H63A-38SF335-9C	2	0.94	1.26	3.35	1.69	-	BS-SFM081-16		
	H63A-38SF630-9	H63A-38SF630-9C	3			6.30		3.15			
1/2"	H63A-50SF354-9	H63A-50SF354-9C	2			3.54	1.85	-	3.15	BS-SFM101-20	
	H63A-50SF630-9	H63A-50SF630-9C	3			6.30		-			
5/8"	H63A-62SF374-9	H63A-62SF374-9C	2	1.06	1.34	3.74	1.97	-	BS-SFM121-20		
	H63A-62SF630-9	H63A-62SF630-9C	3			6.30		3.15			
3/4"	H63A-75SF394-9	H63A-75SF394-9C	2			1.30	1.65	3.94	2.05	-	BS-SFM161-20
	H63A-75SF630-9	H63A-75SF630-9C	2					6.30		-	
1"	H63A-10SF453-9	H63A-10SF453-9C	2	1.73	2.09			4.53	2.28	-	
	H63A-10SF630-9	H63A-10SF630-9C	2					6.30		-	
1 1/4"	H63A-12SF472-9	H63A-12SF472-9C	2			4.72	2.44	-	-	-	
	H63A-12SF630-9	H63A-12SF630-9C	2			6.30		-			
4 mm	H63A-M04SF80-9	-	1	10	-	80	-	-	-		
6 mm	H63A-M06SF130-9	-	2	21	27	130	34	-	BS-SFM058-16		
	H63A-M06SF160-9	-	3			160		80			
8 mm	H63A-M06SF80-9	-	2			80	37	-	80	BS-SFM061-16	
	H63A-M08SF130-9	-	3			130		80			
10 mm	H63A-M08SF160-9	-	3	160	24	32	42	-	BS-SFM081-16		
	H63A-M10SF130-9	-	2	130				-			
12 mm	H63A-M10SF160-9	-	2	160			27	34	47	-	BS-SFM101-20
	H63A-M10SF85-9	-	2	85						-	
16 mm	H63A-M12SF130-9	-	2	130	20	80			-	BS-SFM121-20	
	H63A-M12SF160-9	-	2	160					-		
	H63A-M12SF90-9	-	2	95							
	H63A-M16SF130-9	-	3	27							

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

HEAT SHRINK HOLDERS



HSK TAPER

HSK 63 FORM A BALANCED UP TO 25,000 RPM

Size	Part Number with Through Coolant	Part Number with Coolant Port	Coolant	Style	B (Dia.)	B1 (Dia.)	C	Socket Depth	H	Stop Screw (Opt.)
16 mm	H63A-M16SF160-9	-	-	3	27	34	160	50	80	BS-SFM121-20
	H63A-M16SF95-9	-	-	2			95		-	
20 mm	H63A-M20SF100-9	-	-	2	33	42	100	52	-	BS-SFM161-20
	H63A-M20SF160-9	-	-	2			160		-	
25 mm	H63A-M25SF115-9	-	-	2	44	53	115	58	-	
	H63A-M25SF160-9	-	-	2			160		-	
32 mm	H63A-M32SF120-9	-	-	2			120	62	-	-
	H63A-M32SF160-9	-	-	2			160		-	

HSK 100 FORM A BALANCED UP TO 20,000 RPM

Size	Part Number with Through Coolant	Part Number with Coolant Port	Coolant	Style	B (Dia.)	B1 (Dia.)	C	Socket Depth	H	Stop Screw (Opt.)		
1/4"	H100A-25SF335-9	H100A-25SF335-9C	-	2	0.83	1.06	3.35	1.33	-	BS-SFM058-16		
	H100A-25SF630-9	H100A-25SF630-9C	-	3			6.30		3.15			
5/16"	H100A-31SF335-9	H100A-31SF335-9C	-	2	0.94	1.26	3.35	1.45	-	BS-SFM061-16		
	H100A-31SF630-9	H100A-31SF630-9C	-	3			6.30		3.15			
3/8"	H100A-38SF354-9	H100A-38SF354-9C	-	2			0.94	1.26	3.54	1.69	-	BS-SFM081-16
	H100A-38SF630-9	H100A-38SF630-9C	-	3					6.30		3.15	
1/2"	H100A-50SF374-9	H100A-50SF374-9C	-	2	0.94	1.26			3.74	1.85	-	BS-SFM101-20
	H100A-50SF630-9	H100A-50SF630-9C	-	3					6.30		3.15	
5/8"	H100A-62SF394-9	H100A-62SF394-9C	-	2			1.06	1.34	3.94	1.97	-	BS-SFM121-20
	H100A-62SF630-9	H100A-62SF630-9C	-	3					6.30		3.15	
3/4"	H100A-75SF413-9	H100A-75SF413-9C	-	2	1.30	1.65			4.13	2.05	-	BS-SFM161-20
	H100A-75SF630-9	H100A-75SF630-9C	-	3					6.30		3.15	
1"	H100A-10SF453-9	H100A-10SF453-9C	-	2			1.73	2.09	4.53	2.28	-	
	H100A-10SF630-9	H100A-10SF630-9C	-	3					6.30		3.15	
1 1/4"	H100A-12SF472-9	H100A-12SF472-9C	-	2	1.73	2.09			4.72	2.44	-	
	H100A-12SF630-9	H100A-12SF630-9C	-	3					6.30		3.15	

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

ShrinkFit Holders

SHRINKFIT STATION



Designed and built in Indianapolis, IN.

Features

- Changes tools in 15-25 seconds (1/2" shank)
- Easy-to-Use touch screen controls
- Automatic cooling using 90 PSI shop air

The ShrinkSTATION is an ideal solution for job shops or manufacturing facilities that need a reliable shrink fit machine that can handle practically all sizes and types of toolholders, and is affordable.

This machine features many of the same processor and control technologies used in our ShrinkPRO machines. Every component of this machine from the industrial touch-screen interface, to the motor driven transport rail, and the heavy-duty stainless steel base, is designed for reliable performance and ease-of-use in demanding environments.

Ease-of-Use

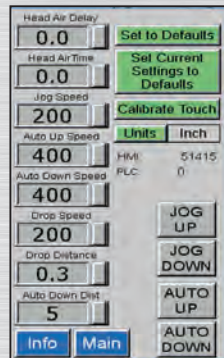
- Use the touch screen to select your shank size, and the machine displays the default cycle time
- Change preset defaults for your tool changes
- Jog feature for easy height adjustments
- Tool moves to the optimum position for heating automatically

ACCESSORIES INCLUDED WITH MACHINE

Part No.	Description	QTY.
TIHS-400	induction heat shrink fit machine	1
TIHS-165	induction stop ring (3-5mm)	1
TIHS-166	induction stop ring (6-12mm)	1
TIHS-167	induction stop ring (14-20mm)	1
TIHS-168	induction stop ring (25-32mm)	1
TIHS-151	toolholder adapter - 30 taper	1
TIHS-152	toolholder adapter - 40 taper & C6	1
TIHS-153	toolholder adapter - 50 taper	1
TIHS-157	toolholder adapter - HSK40 & C4	1
TIHS-158	toolholder adapter - HSK50 & C5	1
TIHS-159	toolholder adapter - HSK63	1
	transport adapter for extended lengths	1
TIHS-GLV	thermal insulated glove	1



select tool shank



change default settings

Part No.	Description	Tool Change	Cooling	Rating	L x D x H	Weight
TIHS-400	induction heat, air cool shrink fit machine	15-25 seconds	2 minutes	1 phase, 220V, 20A	16"x 16"x 22"	42 lbs

ShrinkFit Holders

High Precision Toolholding Solutions

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SHRINKFIT PRO MACHINE



Designed and built in Indianapolis, IN. 20" wide x 20" deep x 37" tall

Features

- Change 1/8" shanks in 2 seconds. 1" in 6 seconds
- Flexible - Operates on 208V up to 480V
- Automatic cooling cycle by compressed air

Features and Flexibility

This machine truly has it all; touchscreen simplicity, state-of-the-art induction heating for fast tool changes, and automatic cooling cycle using your shop air.

Easy-to-Use Touchscreen



Select your shank size and ShrinkPRO sets heating duration

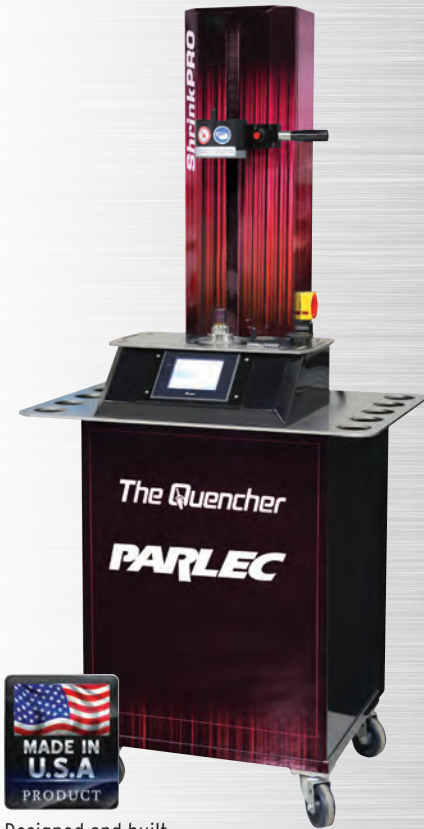
ACCESSORIES INCLUDED WITH MACHINE

Part No.	Description	QTY.
TIHS-6BT30	30 taper adapter	1
TIHS-6CAT40	40 taper adapter	1
TIHS-6C6	C6 taper adapter	1
TIHS-6HSK40	HSK40 adapter	1
TIHS-6HSK50	HSK50 adapter	1
TIHS-6H63/100	HSK63/100 adapter	1
TIHS-GLV	insulated glove	1
	Owners Manual	1

Part No.	Description	Tool Change	Rating	L x D x H	Ship Wt.
TIHS-600	ShrinkPRO machine	2-6 seconds	3 phase, 480V, 20A	20"x 20"x 37"	84 lbs

For HSK32 Adapter order Part No. 00156. For HSK80 Adapter order Part No. 00160.

SHRINKFIT QUENCHER MACHINE



Designed and built in Indianapolis, IN. 36.75" wide x 24" deep x 71" tall

Features

- Change tool and back to spindle in under 1 minute!
- Auto-Quench means you never touch hot toolholder
- Flexible - Operates on 208V up to 480V

The Quencher ShrinkFIT machine features a liquid cooling cycle that is 250% faster than air-cooled units. Cooling time is to less than 30 seconds!

The hot tool is immersed in the Quench Tank and the cool tool is returned to the shrink position in only 30 seconds and automatically dried using shop air.

The Quencher is a great choice for dedicated tool changing stations or cellular workflows, because it can operate on voltages from 208 - 480VAC.

Part No.	Description	Tool Change	Cooling Cycle	Rating	L x D x H	Ship Wt.
TIHS-500	ShrinkPRO Quencher	2-6 seconds	45 seconds	3 phase, 480V, 20A	37"x 24"x 71"	660 lbs

NOTE: 00500 includes same accessories as included with 00600 ShrinkPRO, plus coolant is pre-loaded. Owners man

STOP SCREWS



Size	Part Number	Thread	Hex	Length
1/4"	BS-SFM058-16	M5 x .8	2.5 mm	.630" (16 mm)
M6	BS-SFM058-16	M5 x .8	2.5 mm	.630" (16 mm)
5/16"	BS-SFM061-16	M6 x 1	3 mm	.630" (16 mm)
M8	BS-SFM061-16	M6 x 1	3 mm	.630" (16 mm)
3/8"	BS-SFM081-16	M8 x 1	4 mm	.630" (16 mm)
M10	BS-SFM081-16	M8 x 1	4 mm	.630" (16 mm)
1/2"	BS-SFM101-20	M10 x 1	5 mm	.787" (20 mm)
9/16"	BS-SFM101-20	M10 x 1	5 mm	.787" (20 mm)
M12	BS-SFM101-20	M10 x 1	5 mm	.787" (20 mm)
5/8"	BS-SFM121-20	M12 X 1	6 mm	.787" (20 mm)
5/8"	BS-SFM121-20	M12 X 1	6 mm	.787" (20 mm)
3/4"	BS-SFM161-20	M16 X 1	8 mm	.787" (20 mm)
1"	BS-SFM161-20	M16 X 1	8 mm	.787" (20 mm)
1 1/4"	BS-SFM161-20	M16 X 1	8 mm	.787" (20 mm)
M20	BS-SFM161-20	M16 X 1	8 mm	.787" (20 mm)
M25	BS-SFM161-20	M16 X 1	8 mm	.787" (20 mm)
M32	BS-SFM161-20	M16 X 1	8 mm	.787" (20 mm)



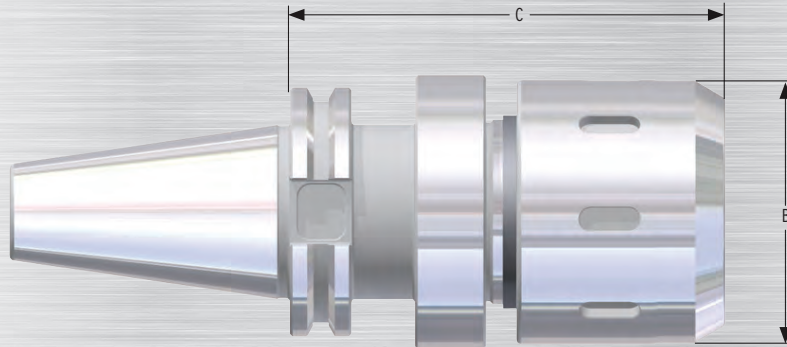
POWER MILLING CHUCKS:

- Heavy grip force for heavy roughing capability
- Reduction bushings to 3/16"
- Improves speed and tool life over End Mill holders
- 360° degree clamping

Power Milling Chucks

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POWER MILLING CHUCKS



BT TAPER WITH AD/B COOLANT

BT 40

Size	Part Number	B (Dia.)	C	Socket Depth	Wrench
3/4"	B40-75MC414	2.05	4.14	3.15	75MCLW
1 1/4"	B40-12MC414	2.88		3.34	12MCLW

CAT TAPER WITH AD/B COOLANT

CAT 40

Size	Part Number	B (Dia.)	C	Socket Depth	Wrench
3/4"	C40-75MC354	2.05	3.54	3.15	75MCLW
1 1/4"	C40-12MC414	2.88	4.14	3.34	12MCLW

CAT 50

Size	Part Number	B (Dia.)	C	Socket Depth	Wrench
3/4"	C50-75MC414	2.05	4.14	3.15	75MCLW
	C50-12MC414			3.34	
1 1/4"	C50-12MC649	2.88	6.49		

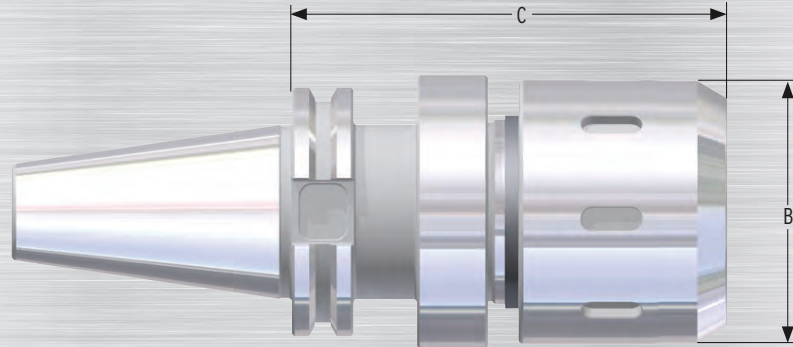
Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

Power Milling Chucks

High Precision Toolholding Solutions

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POWER MILLING CHUCKS



CAT TAPER WITH SIMULFIT® DUAL CONTACT TAPER

CAT 40

Size	Part Number	B (Dia.)	C	Socket Depth	Wrench
3/4"	C40F-75MC354	2.05	3.54	3.15	75MCLW
1 1/4"	C40F-12MC354	2.88	4.14	3.54	12MCLW

CAT 50

Size	Part Number	B (Dia.)	C	Socket Depth	Wrench
3/4"	C50F-75MC414	2.05	4.14	3.15	75MCLW
1 1/4"	C50F-12MC414	2.88		3.34	12MCLW

HSK TAPER

HSK 63 FORM A

Size	Part Number	B (Dia.)	C	Socket Depth	Wrench
3/4"	H63-75MC374	2.05	3.74	3.15	75MCLW
1 1/4"	H63-12MC433	2.88	4.33	3.34	12MCLW

HSK 100 FORM A

Size	Part Number	B (Dia.)	C	Socket Depth	Wrench
1 1/4"	H100-12MC452	2.88	4.52	3.34	12MCLW

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

Power Milling Chucks

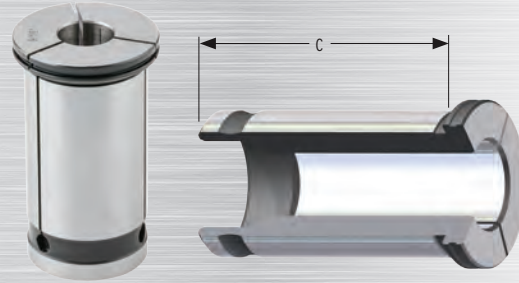
BUSHINGS

75MC INCH

	Part Number	I.D.	O.D.	C
75MC INCH	75MCRB-188	.1875	0.75	2.00
	75MCRB-250	.2500	0.75	2.00
	75MCRB-313	.3125	0.75	2.00
	75MCRB-375	.3750	0.75	2.00
	75MCRB-437	.4375	0.75	2.00
	75MCRB-500	.5000	0.75	2.00
	75MCRB-563	.5625	0.75	2.00
	75MCRB-625	.6250	0.75	2.00

75MC METRIC

	Part Number	I.D.	O.D.	C
75MC METRIC	75MCRB-06MM	6 mm	0.75	2.00
	75MCRB-08MM	8 mm	0.75	2.00
	75MCRB-10MM	10 mm	0.75	2.00
	75MCRB-12MM	12 mm	0.75	2.00
	75MCRB-14MM	14 mm	0.75	2.00
	75MCRB-16MM	16 mm	0.75	2.00



12MC INCH

	Part Number	I.D.	O.D.	C
12MC INCH	12MCRB-188	.1875	1.25	2.75
	12MCRB-250	.2500	1.25	2.75
	12MCRB-313	.3125	1.25	2.75
	12MCRB-375	.3750	1.25	2.75
	12MCRB-500	.5000	1.25	2.75
	12MCRB-563	.5625	1.25	2.75
	12MCRB-625	.6250	1.25	2.75
	12MCRB-750	.7500	1.25	2.75
	12MCRB-875	.8750	1.25	2.75"
	12MCRB-100	1.0000	1.25	2.75

12MC METRIC

	Part Number	I.D.	O.D.	C
12 MC METRIC	12MCRB-08MM	8 mm	1.25	2.75
	12MCRB-10MM	10 mm	1.25	2.75
	12MCRB-12MM	12 mm	1.25	2.75
	12MCRB-14MM	14 mm	1.25	2.75
	12MCRB-16MM	16 mm	1.25	2.75
	12MCRB-20MM	20 mm	1.25	2.75
	12MCRB-25MM	25 mm	1.25	2.75

WRENCH

Size	Part Number	Type
3/4" AND 1 1/4"	1275MCLW	Milling Chuck Lug Wrench



Adjustable Lug Spanner Wrench



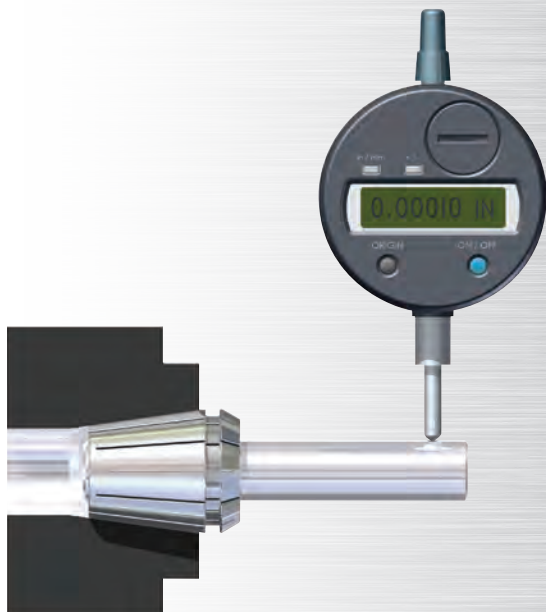
ER COLLET CHUCKS:

- Compatible with all ISO 15488 products
 - Standard and upgraded series of collets and nuts
 - DIN design for market compatibility
- Available in a variety of coolant entry and delivery configurations
- Available with Simulfit (dual contact) tapers
 - CAT, BT and HSK

ER Toolholders

CONCENTRICITY = TOOL LIFE

Improve your systems performance and tool life by combining high performance collet chucks and high performance collets. Upgrade today for higher performance and operational cost savings!



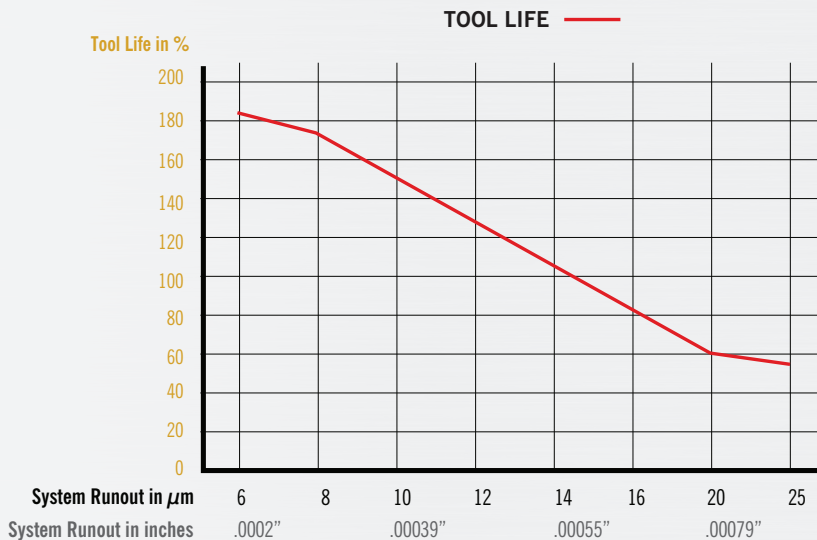
> Technical Features

- Gage tolerance of a Class AA 5 micron collet is .0002" (.005mm) runout at distance to the ISO 15488, measured as TIR
- Measured in gage with AT2 taper and maximum 1 micron runout of taper

Collet Diameter	Length at measurement	Class 1	Class 2	Parlec Class AA (5 Micron)
.039 - .063(1-1.6)	.098 (2.5)	.0006 (.015)	.0004 (.010)	.0002 (.005)
.063 - .118(1.6 - 3)	.393 (10)			
.118 - .280 (3 - 7)	.630 (20)			
.280 - .394 (7-10)	.984 (25)	.0008 (.020)	.0006 (.015)	
.394 - .708 (10-18)	1.57 (40)			
.708 - 1.08 (18-26)	1.97 (50)			
1.08 - 1.18 (26-30)	2.36 (60)	.0010 (.025)	.0008 (.020)	

*Reference ISO 15488

> Tool Life Prediction of Carbide Tools



> Total Cost of Poor Runout

TOOLING COST

Utilizing Standard Production System

	Per Cutting Tool	TOTAL
Pieces	250	3000
Cost of Drill	\$100	\$1200
Standard Collet Cost	\$32	\$32
Total Cost		\$1232

Utilizing Grade AA Performance System

	Per Cutting Tool	TOTAL
Pieces	681	3000
Cost of Drill	\$100	\$500
Grade AA Collet Cost	\$60	\$60
Total Cost		\$560

> Effects of Runout on the Cutting Edges

Flute 1

High runout flute takes a heavier than planned cut requiring slowing of planned feed.



Flute 2

Middle runout flute performs as planned.



Flute 3

Low runout flute does not take enough chip to dissipate heat and wears prematurely.



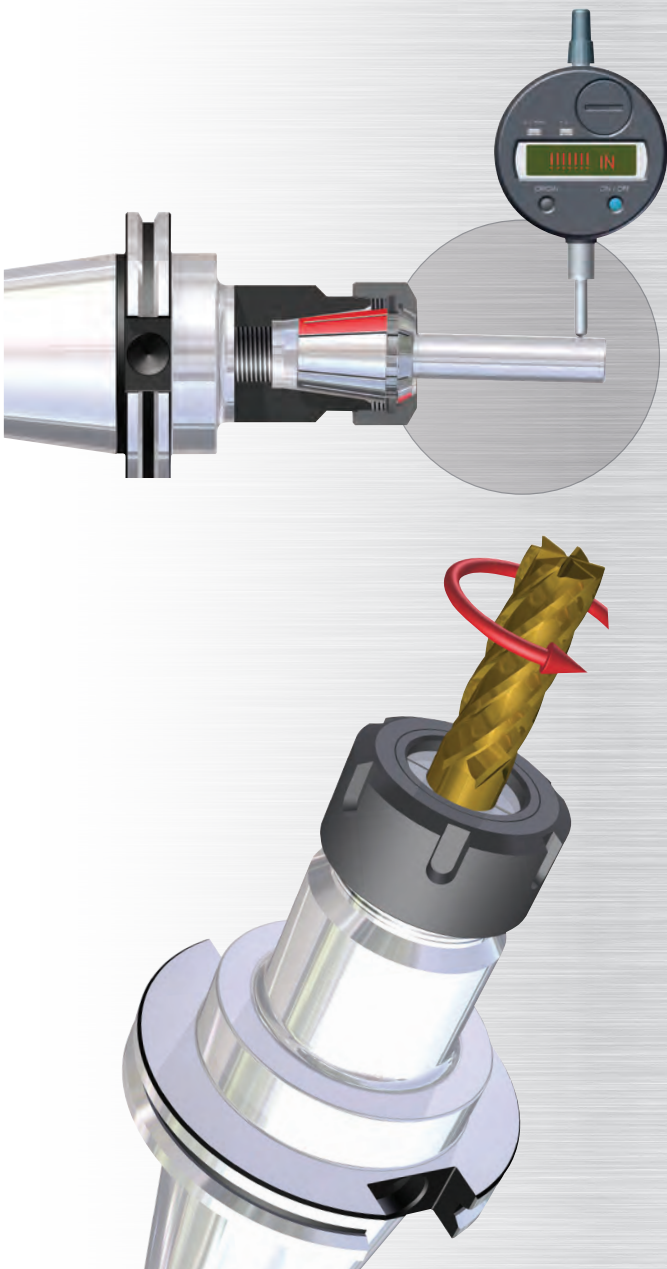
> Technical Features

Standard DIN style nuts can restrict the uniform contact of the top angle of the collet creating uneven clamping. This will create runout in addition to the normal result of the collet seat and collet. Nuts with friction races are designed to increase grip force and decrease angular deflection. Use Collet Chucks with the Parlec Power Nut for best results.

> Other AA Collet Design Features and Benefits

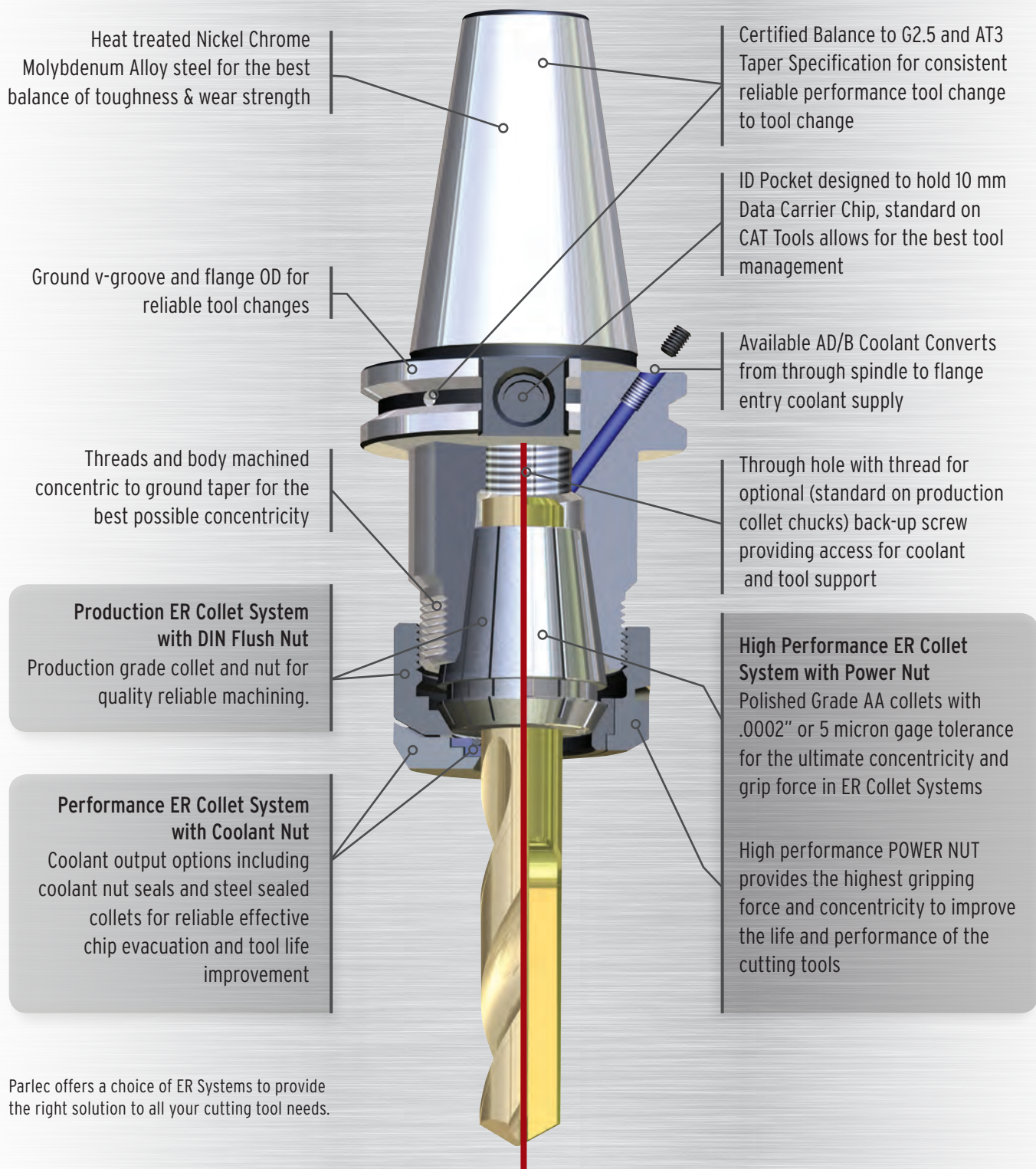
- 12 slots instead of 16 allows for more than enough collapse and increase in the area of contact with less tendency to distort.
- All edges are deburred and rounded to promote good interface with the taper of the chuck without the tendency to damage it. This results in more consistent repeatability of the system.
- Collets are polished to eliminate minor blemishes that tend to promote corrosion. Better corrosion resistance will result in longer product life of both the collet and the holder.
- Highly polished OD surfaces reduce the amount of force absorbed by friction between the collet and the collet chuck seat, increasing the grip force on the cutting tool. The inside bore of the collet is intentionally left unpolished to increase the friction between the collet and the cutting tool shank.

> The result of an improved AA collet in a quality chuck is increased gripping force, improved rigidity, decreased runout and an overall satisfaction in your collet chuck system.



ER Toolholders

PARLEC ER SYSTEM FEATURES



Heat treated Nickel Chrome Molybdenum Alloy steel for the best balance of toughness & wear strength

Certified Balance to G2.5 and AT3 Taper Specification for consistent reliable performance tool change to tool change

Ground v-groove and flange OD for reliable tool changes

ID Pocket designed to hold 10 mm Data Carrier Chip, standard on CAT Tools allows for the best tool management

Threads and body machined concentric to ground taper for the best possible concentricity

Available AD/B Coolant Converts from through spindle to flange entry coolant supply

Production ER Collet System with DIN Flush Nut
Production grade collet and nut for quality reliable machining.

Through hole with thread for optional (standard on production collet chucks) back-up screw providing access for coolant and tool support

Performance ER Collet System with Coolant Nut
Coolant output options including coolant nut seals and steel sealed collets for reliable effective chip evacuation and tool life improvement




High Performance ER Collet System with Power Nut
Polished Grade AA collets with .0002" or 5 micron gage tolerance for the ultimate concentricity and grip force in ER Collet Systems

High performance POWER NUT provides the highest gripping force and concentricity to improve the life and performance of the cutting tools

Parlec offers a choice of ER Systems to provide the right solution to all your cutting tool needs.

COLLET CHUCK PERFORMANCE CHOICES

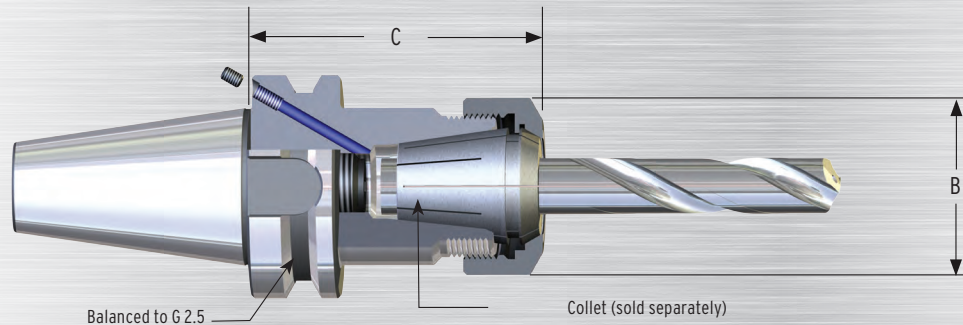
> Performance Selection

Production ER System 	High Performance ER System 	High Performance PLUS ER System 
System Components Profile <ul style="list-style-type: none"> ■ Performance Chuck ■ Standard Flush Nut ■ Standard Grade Collet 	System Components Profile <ul style="list-style-type: none"> ■ Performance Chuck ■ Power Nut ■ Standard Grade Collet 	System Components Profile <ul style="list-style-type: none"> ■ Performance Chuck ■ Power Nut ■ Grade AA 5 Micron Collet
<p>See the tables in the following ER Collet Chuck section for all compatible nut options for each spindle type. AD/B available on select chucks - see tables. (pgs. 46-53)</p>		

> Performance Selection with Coolant Delivery Options

Production ER System 	Performance ER System 	Performance Plus ER System 
System Components Profile <ul style="list-style-type: none"> ■ Performance Chuck ■ Standard Flush Nut ■ Standard Grade Collet 	System Components Profile <ul style="list-style-type: none"> ■ Performance Chuck ■ Coolant Seal Nut ■ Standard Grade Collet and Nut Seal 	System Components Profile <ul style="list-style-type: none"> ■ Performance Chuck ■ Coolant Seal Nut ■ Grade AA 5 Micron Collet and Nut Seal
<p>All compatible nut options for each spindle type can be found in each collet chuck table on the following pages. AD/B available on select chucks - see tables. (pgs. 46-53)</p>		

ER COLLET CHUCKS WITH DIN FLUSH NUT



BT TAPER

BT 30 BALANCED UP TO 25,000 RPM

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Power Nut (Opt.)	Coolant Nut (Opt.)
ER16	B30-16ERF236	1.10	2.36	1.83	16ERHN	16ERHPN	16ERHCN
ER20	B30-20ERF236	1.34	2.36	2.48	20ERHN	20ERHPN	20ERHCN
ER32	B30-32ERF236	1.97	2.36	3.88	32ERN	32ERP	32ERCN

BT 40 BALANCED UP TO 25,000 RPM

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Power Nut (Opt.)	Coolant Nut (Opt.)
ER11	B40-11ERF400	0.75	4.00	1.50	11ERHN	-	-
	B40-16ERF250		2.50	1.50	16ERHN	16ERHPN	16ERHCN
ER16	B40-16ERF300	3.00	2.00				
	B40-16ERF400	4.00	3.50				
	B40-16ERF500	5.00	2.00				
ER20	B40-20ERF400	1.34	4.00	1.50	20ERHN	20ERHPN	20ERHCN
	B40-20ERF600		6.00	2.00			
ER25	B40-25ERF400	1.65	4.00	1.50	25ERN	25ERP	25ERCN
	B40-25ERF600		6.00	2.00			
ER32	B40-32ERF400	1.97	4.00	3.88	32ERN	32ERP	32ERCN
	B40-32ERF600		6.00	3.88			
ER40	B40-40ERF400	2.48	4.00	4.12	40ERN	40ERP	40ERCN
	B40-40ERF600		6.00	4.12			

BT TAPER WITH AD/B COOLANT

BT 40 BALANCED UP TO 25,000 RPM

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Power Nut (Opt.)	Coolant Nut (Opt.)
ER11	B40BC-11ERF400	0.75	4.00	1.83	11ERHN	-	-
	B40BC-16ERF300		3.00	2.48	16ERHN	16ERHPN	16ERHCN
ER16	B40BC-16ERF400	1.10	4.00	3.88			
	B40BC-16ERF500		5.00	2.00			
ER32	B40BC-32ERF400	1.97	4.00	3.88	32ERN	32ERP	32ERCN
ER40	B40BC-40ERF400	2.48	4.00	4.10	40ERN	40ERP	40ERCN

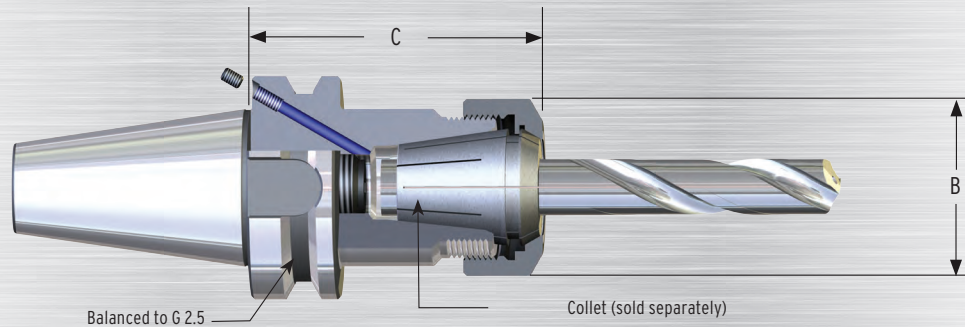
Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

ER Collet Chucks

High Precision Toolholding Solutions

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ER COLLET CHUCKS WITH DIN FLUSH NUT



BT TAPER WITH SIMULFIT® DUAL CONTACT TAPER

BT 30 BALANCED UP TO 25,000 RPM

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Power Nut (Opt.)	Coolant Nut (Opt.)
ER16	B30F-16ERF236	1.10	2.36	1.83	16ERHN	16ERHPH	16ERHCN
ER20	B30F-20ERF236	1.34	2.36	2.48	20ERHN	20ERHPN.	20ERHCN
ER32	B30F-32ERF236	1.97	2.36	3.88	32ERN	ERERPN	32ERCN

BT 40 BALANCED UP TO 25,000 RPM

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Power Nut (Opt.)	Coolant Nut (Opt.)
ER16	B40F-16ERF300	1.10	3.00	2.00	16ERHN	16ERHPN	16ERHCN
	B40F-16ERF500	1.10	5.00	2.00			
ER20	B40F-20ERF400	1.34	4.00	1.50	20ERHN	20ERHPN	20ERHCN
ER32	B40F-32ERF400	1.97	4.00	3.88	32ERN	32ERPN	32ERCN
	B40F-32ERF600	1.97	6.00	3.88			

HAAS BT TAPER WITH NO DRIVE SLOTS

BT 30 BALANCED UP TO 25,000 RPM

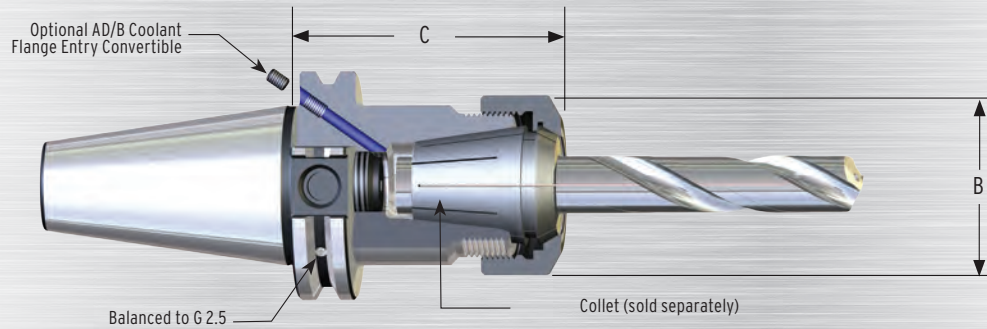
Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Power Nut (Opt.)	Coolant Nut (Opt.)
ER16	B30H-16ER248	1.10	2.48	1.83	16ERHN	16ERHPN	16ERHCN
ER32	B30H-32ER248	1.97	2.48	3.88	32ERN	32ERPN	32ERCN

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

ER Collet Chucks

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ER COLLET CHUCKS WITH DIN FLUSH NUT



CAT TAPER

CAT 40 BALANCED UP TO 25,000 RPM

Size	Part Number	B Dia.	C	Socket Depth	Collet Nut (Incl.)	Power Nut (Opt.)	Coolant Nut (Opt.)
ER 11	C40-11ERF250	0.75	2.50	2.25	11ERHN	-	-
	C40-11ERF400		4.00				
	C40-11ERF600		6.00				
ER 16	C40-16ERF250	1.10	2.50	2.43	16ERHN	16ERHPN	16ERHCN
	C40-16ERF300		3.00				
	C40-16ERF400		4.00				
	C40-16ERF500		5.00				
ER 20	C40-16ERF800	1.34	8.00	2.43	20ERHN	20ERHPN	20ERHCN
	C40-20ERF300		3.00				
	C40-20ERF400		4.00				
	C40-20ERF600		6.00				
ER 25	C40-20ERF800	1.64	8.00	3.50	25ERN	25ERP	25ERCN
	C40-25ERF250		2.50				
	C40-25ERF400		4.00				
ER 32	C40-25ERF600	1.97	6.00	3.88	32ERN	32ERP	32ERCN
	C40-32ERF236		2.36				
	C40-32ERF300		3.00				
	C40-32ERF400		4.00				
ER 40	C40-32ERF600	2.47	6.00	4.10	40ERN	40ERN	40ERCN
	C40-40ERF400		4.00				
	C40-40ERF600		6.00				

CAT 50 BALANCED UP TO 20,000 RPM

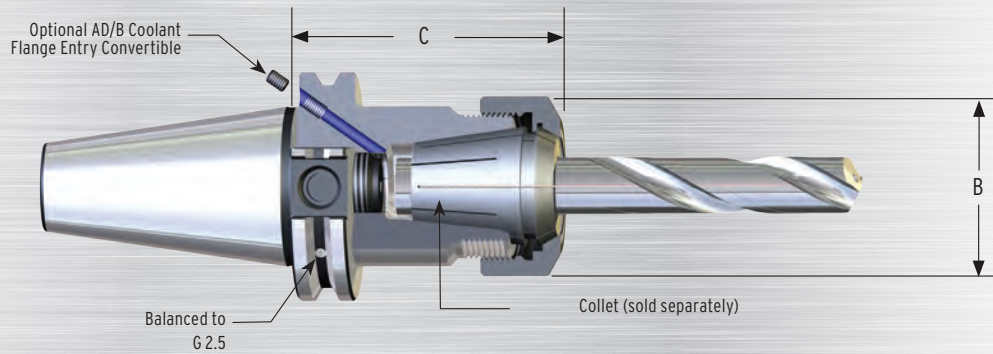
Size	Part Number	B Dia.	C	Socket Depth	Collet Nut (Incl.)	Power Nut (Opt.)	Coolant Nut (Opt.)
ER 16	C50-16ERF400	1.10	4.00	2.50	16ERHN	16ERHPN	16ERHCN
	C50-16ERF600		6.00				
	C50-16ERF800		8.00				
	C50-16ERF1000		10.00				

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

ER Collet Chucks

High Precision Toolholding Solutions

ER COLLET CHUCKS WITH DIN FLUSH NUT



CAT TAPER

CAT 50 BALANCED UP TO 20,000 RPM

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Power Nut (Opt.)	Coolant Nut (Opt.)
ER 20	C50-20ERF400	1.34	4.00	3.88	20ERHN	20ERHPN	20ERHCN
	C50-20ERF600		6.00				
	C50-20ERF800		8.00				
ER 25	C50-25ERF600	1.64	6.00	4.00	25ERN	25ERP	25ERCN
	C50-25ERF800		8.00				
	C50-25ERF1000		10.00				
ER 32	C50-32ERF400	1.97	4.00	3.88	32ERN	32ERP	32ERCN
	C50-32ERF600		6.00				
	C50-32ERF800		8.00				
	C50-32ERF1000		10.00				
ER 40	C50-40ERF400	2.47	4.00	4.10	40ERN	40ERP	40ERCN
	C50-40ERF600		6.00				
	C50-40ERF800		8.00				
	C50-40ERF1000		10.00				

CAT TAPER WITH AD/B COOLANT

CAT 40 BALANCED UP TO 25,000 RPM

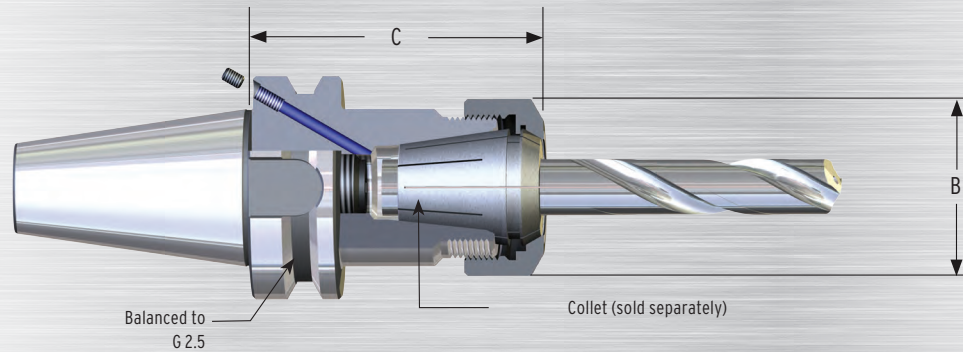
Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Power Nut (Opt.)	Coolant Nut (Opt.)
ER 16	C40BC-16ERF250	1.10	2.50"	2.43	16ERHN	16ERHPN	16ERHCN
	C40BC-16ERF300		3.00"				
	C40BC-16ERF400		4.00"				
	C40BC-16ERF500		5.00"				
ER 20	C40BC-20ERF300	1.34	3.00"	2.43	20ERHN	20ERHPN	20ERHCN
	C40BC-20ERF400		4.00"				
ER 25	C40BC-25ERF250	1.64	2.50"	2.50	25ERN	25ERP	25ERCN
	C40BC-25ERF300		3.00"				

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

ER Collet Chucks

50 High Precision Toolholding Solutions

ER COLLET CHUCKS WITH DIN FLUSH NUT



CAT TAPER WITH AD/B COOLANT

CAT 40 BALANCED UP TO 25,000 RPM

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Power Nut (Opt.)	Coolant Nut (Opt.)
ER 25	C40BC-25ERF400	1.64	4.00	3.50	25ERN	25ERP	25ERCN
	C40BC-25ERF600		6.00				
ER 32	C40BC-32ERF300	1.97	3.00	3.88	32ERN	32ERP	32ERCN
	C40BC-32ERF400		4.00				
ER 40	C40BC-32ERF600	2.47	6.00	4.10	40ERN	40ERP	40ERCN
	C40BC-40ERF400		4.00				

CAT 50 BALANCED UP TO 20,000 RPM

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Power Nut (Opt.)	Coolant Nut (Opt.)
ER 16	C50BC-16ERF400	1.10	4.00	2.50	16ERHN	16ERHPN	16ERHCN
	C50BC-16ERF600		6.00				
ER 20	C50BC-20ERF400	1.34	4.00	3.88	20ERHN	20ERHPN	20ERHCN
	C50BC-20ERF600		6.00				
ER 25	C50BC-25ERF400	1.64	4.00	4.00	25ERN	25ERP	25ERCN
	C50BC-25ERF600		6.00				
ER 32	C50BC-32ERF400	1.97	4.00	3.88	32ERN	32ERP	32ERCN
	C50BC-32ERF600		6.00				
ER 40	C50BC-40ERF400	2.47	4.00	4.10	40ERN	40ERP	40ERCN
	C50BC-40ERF600		6.00				

CAT TAPER WITH SIMULFIT® DUAL CONTACT TAPER

CAT 40 BALANCED UP TO 25,000 RPM

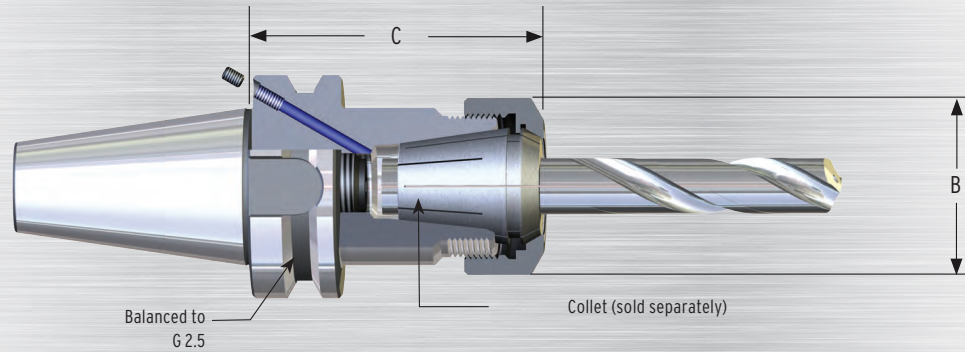
Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Power Nut (Opt.)	Coolant Nut (Opt.)
ER 11	C40F-11ERF400	0.75	4.00	2.25	11ERHN	-	-
	C40F-11ERF600		6.00				
	C40F-16ERF250		2.50				
ER16	C40F-16ERF400	1.10	4.00	2.43	16ERHN	16ERHPN	16ERHCN
	C40F-16ERF500		5.00				
	C40F-16ERF600		6.00				
	C40F-16ERF800		8.00				

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

ER Collet Chucks

High Precision Toolholding Solutions

ER COLLET CHUCKS WITH DIN FLUSH NUT



CAT TAPER WITH SIMULFIT® DUAL CONTACT TAPER

CAT 40 BALANCED UP TO 25,000 RPM

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Power Nut (Opt.)	Coolant Nut (Opt.)
ER 20	C40F-20ERF300	1.34	3.00"	2.43	20ERHN	20ERHPN	20ERHCN
	C40F-20ERF400		4.00"	3.88			
	C40F-20ERF600		6.00"				
ER 25	C40F-25ERF250	1.64	2.50"	2.50	25ERN	25ERPNN	25ERCNN
	C40F-25ERF400		4.00"	3.50			
	C40F-25ERF600		6.00"				
ER 32	C40F-32ERF300	1.97	3.00"	3.88	32ERN	32ERPNN	32ERCNN
	C40F-32ERF400		4.00"				
	C40F-32ERF600		6.00"				
	C40F-32ERF800		8.00"				
ER 40	C40F-40ERF400	2.47	4.00"	4.10	40ERN	40ERPNN	40ERCNN

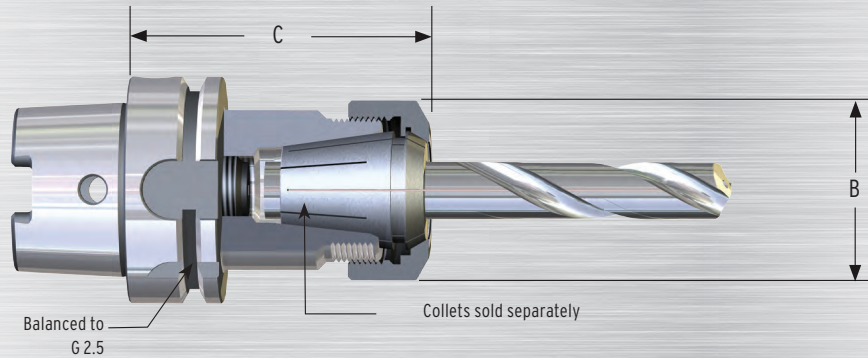
CAT 50 BALANCED UP TO 20,000 RPM

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Power Nut (Opt.)	Coolant Nut (Opt.)
ER 16	C50F-16ERF400	1.10	4.00"	2.50	16ERHN	16ERHPN	16ERHCN
	C50F-16ERF600		6.00"				
	C50F-16ERF800		8.00"				
ER 32	C50F-32ERF400	1.97	4.00"	3.88	32ERN	32ERPNN	32ERCNN
	C50F-32ERF600		6.00"				
	C50F-32ERF800		8.00"				
	C50F-32ERF1000		10.00"				
ER 40	C50F-40ERF400	2.47	4.00"	4.10	40ERN	40ERPNN	40ERCNN
	C50F-40ERF600		6.00"				

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

ER Collet Chucks

ER COLLET CHUCKS WITH DIN FLUSH NUT



HSK TAPER

HSK 63 FORM A BALANCED UP TO 25,000 RPM

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Power Nut (Opt.)	Coolant Nut (Opt.)
ER 16	H63-16ERF394	1.10	3.94"	2.10	16ERHN	16ERHPN	16ERHCN
	H63-16ERF630		6.30"	3.00			
ER 20	H63-20ERF394	1.34	3.94"	1.88	20ERHN	20ERHPN	20ERHCN
	H63-20ERF630		6.30"				
ER 25	H63-25ERF315	1.64	3.15"	2.30	25ERN	25ERP	25ERCN
	H63-25ERF630		6.30"				
ER 32	H63-32ERF327	1.97	3.27"	1.80	32ERN	32ERP	32ERCN
	H63-32ERF394		3.94"	2.50			
	H63-32ERF472		4.72"				
ER 40	H63-40ERF394	2.47	3.94"	2.50	40ERN	40ERP	40ERCN

HSK 100 FORM A BALANCED UP TO 20,000 RPM

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Power Nut (Opt.)	Coolant Nut (Opt.)
ER 16	H100-16ERF394	1.10	3.94"	2.10	16ERHN	16ERHPN	16ERHCN
	H100-16ERF630		6.30"	3.00			
ER 20	H100-20ERF394	1.34	3.94"	2.08	20ERHN	20ERHPN	20ERHCN
	H100-20ERF630		6.30"	3.28			
ER 25	H100-25ERF394	1.64	3.94"	2.30	25ERN	25ERP	25ERCN
ER 32	H100-32ERF394	1.97	3.94"	2.30	32ERN	32ERP	32ERCN
	H100-32ERF630		6.30"	3.00			
ER 40	H100-40ERF394	2.47	3.94"	2.30	40ERN	40ERP	40ERCN
	H100-40ERF472		4.72"	3.00			

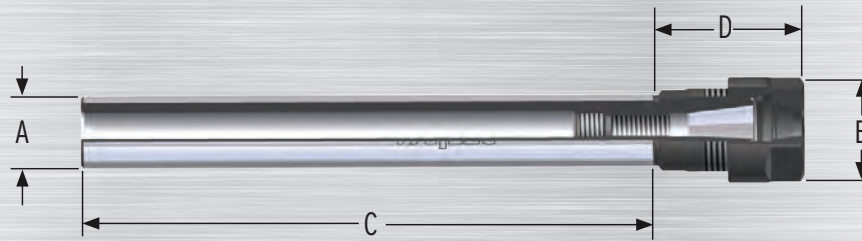
Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

ER Collet Chucks

High Precision Toolholding Solutions

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ER COLLET CHUCKS WITH DIN FLUSH NUT



STRAIGHT SHANK TAPER

ER11 COLLET SERIES .020" TO .275" (.5 MM TO 7MM)

Size	Part Number	A (Dia.)	B (Dia.)	C	D	OAL	Collet Nut (Incl.)	Stop Screw (Incl.)	Nut Tightening Torque	Wrench
ER11	ER11-500-6H	.500	.615	5.50	2.90	6.75	LN-ER11	029-909	22 ft. lbs.	ECN56W
	ER11-625-6H	.625	.625	5.51	1.65	6.75	LN-ER11	029-909	22 ft. lbs.	ECN56W
	ER11-750-6H	.750	.750	6.00	2.00	6.75	LN-ER11	029-088	22 ft. lbs.	ECN56W

ER16 COLLET SERIES .020" TO .393" (.5 MM TO 10MM)

Size	Part Number	A (Dia.)	B (Dia.)	C	D	OAL	Collet Nut (Incl.)	Stop Screw (Incl.)	Nut Tightening Torque	Wrench
ER16	ER16-750-550	.750	1.100	4.00	2.00	5.50	16ERHPN	BS-20	42 ft. lbs.	ECN20W
	ER16-750-750	.750	1.100	6.00	2.00	7.50	16ERHPN	BS-20	42 ft. lbs.	ECN20W
	ER16-750-7H	.750	0.850	6.30	3.90	7.00	LN-ER16	BS-20	42 ft. lbs.	ECN78W

ER20 COLLET SERIES .039" TO .511" (1MM TO 13MM)

Size	Part Number	A (Dia.)	B (Dia.)	C	D	OAL	Collet Nut (Incl.)	Stop Screw (Incl.)	Nut Tightening Torque	Wrench
ER20	ER20-100-7H	1.000	1.209	6.40	6.50	7.20	LN-ER20	BS-SF5818LH-.75	60 ft. lbs.	ENC20W
	ER20-750-6H	.750	1.344	6.00	1.81	7.70	20ERHPN	029-E12	60 ft. lbs.	20ERHNW

ER25 COLLET SERIES .039" TO .630" (1MM TO 16MM)

Size	Part Number	A (Dia.)	B (Dia.)	C	D	OAL	Collet Nut (Incl.)	Stop Screw (Incl.)	Nut Tightening Torque	Wrench
ER25	ER25-750-4	.750	1.643	4.00	1.81	6.10	25ERN	029-E12	86 ft. lbs.	25ERNW
	ER25-750-531	.750	1.643	3.94	1.31	5.31	25ERP	029-E12	86 ft. lbs.	25ERNW

ER32 COLLET SERIES .078" TO .787" (2MM TO 20MM)

Size	Part Number	A (Dia.)	B (Dia.)	C	D	OAL	Collet Nut (Incl.)	Stop Screw (Incl.)	Nut Tightening Torque	Wrench
ER32	ER32-100-425	1.000	1.970	2.00	3.63	4.25	32ERP	BS-11	100 ft. lbs.	32ERNW
	ER32-125-6	1.250	1.970	5.75	3.00	8.00	32ERP	BS-11	100 ft. lbs.	32ERNW

ER40 COLLET SERIES .118" TO 1.181" (3MM TO 30MM)

Size	Part Number	A (Dia.)	B (Dia.)	C	D	OAL	Collet Nut (Incl.)	Stop Screw (Incl.)	Nut Tightening Torque	Wrench
ER40	ER40-125-2	1.250	2.470	2.37	3.75	4.75	40ERN	029-E18	146 ft. lbs.	40ERNW

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

ER Collet Chucks

ER COLLET SELECTION

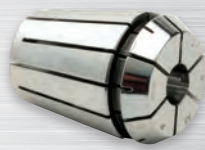
<p>ER STANDARD COLLET (ER Standard Collets see page 55-56)</p>	<ul style="list-style-type: none"> For use in ER collet chucks for drilling, reaming, boring, tapping, and milling. Meets DIN 6499-B industry standard. Collapse range .0393"(1 mm) maximum. Size 11 collapse range .020"(1/2 mm) maximum. For higher runout tolerance use HIGH CONCENTRICITY GRADE AA, 5 Micron COLLETS
<p>ER TAP COLLETS (ER Tap Collets see page 61)</p>	<ul style="list-style-type: none"> Designed for use with production ER Tapping tools. Provide maximum concentricity with positive driving force.
<p>ER AA GRADE 5 MICRON COLLET (ER AA Grade 5 Micron Collets see page 57-58)</p> <p>HIGH CONCENTRICITY >>></p>	<ul style="list-style-type: none"> Evenly distributed cutting edges for high performance machining. .0002" (5 micron) gage tolerance. Exceeds DIN requirements. Recommended use on size. 12 slots, deburred and polished. Increased grip force with reduced friction to collet seat. Improve system performance and lower cost per piece when used with a quality chuck.

ER COLLET SELECTION WITH COOLANT OPTIONS

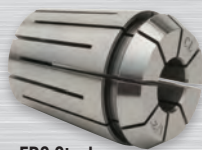
<p>ERS STEEL SEALED COLLET (ER Steel Sealed Collets see page 59)</p>	<ul style="list-style-type: none"> For use with regular straight shank tools. Withstands coolant pressure up to 1,800 psi. Collet collapse is .005."
<p>COOLANT NUT SEAL SYSTEM (Coolant Nut Seals see page 60) (Coolant Nuts see page 62)</p>	<ul style="list-style-type: none"> Allows full range of collet when used with standard collets. Allows coolant seal with grade AA, 5 Micron collets. Prevents abrasive machining dust of chips from contaminating collet system. Seals up to 1,200 psi.



ER Standard Collet



ER AA Grade 5 Micron Collet



ERS Steel Sealed Collet



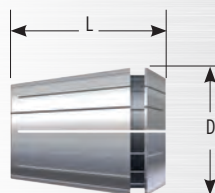
ER Tap Collet



Coolant Seal

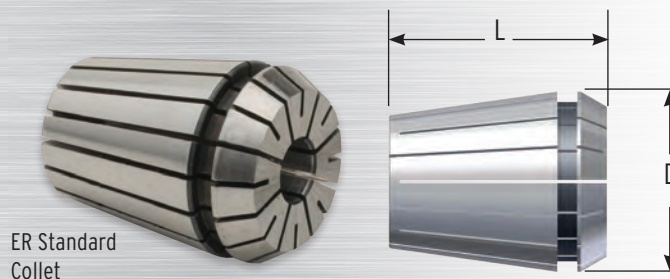


Collet Nuts



ER COLLET SIZE	ER11	ER16	ER20	ER25	ER32	ER40
LENGTH (L)	0.708	1.082	1.240	1.338	1.574	1.811
DIAMETER (D)	0.452	0.669	0.827	1.023	1.300	1.614

ER STANDARD COLLET



ER Standard Collet

*For specifications see page 54.

ER 11 INCH

Part Number	Size	Range
ER11-0062	1/16"	.0428"-.0625"
ER11-0093	3/32"	.0740"-.0938"
ER11-0125	1/8"	.1053"-.1250"
ER11-0157	5/32"	.1378"-.1575"
ER11-0187	3/16"	.1678"-.1875"
ER11-0218	7/32"	.1990"-.2187"
ER11-0250	1/4"	.2303"-.2500"

ER 11 INCH SET

PART NUMBER	ER11-S007
NUMBER OF PIECES	7 PIECES
RANGE	1/16" - 1/4"

ER 11 METRIC

ER11-0039	1 mm	.5-1 mm
ER11-0059	1.5 mm	1-1.5 mm
ER11-0078	2 mm	1.5-2 mm
ER11-0098	2.5 mm	2-2.5 mm
ER11-0118	3 mm	2.5-3 mm
ER11-0137	3.5 mm	3-3.5 mm
ER11-0157	4 mm	3.5-4 mm
ER11-0177	4.5 mm	4-4.5 mm
ER11-0196	5 mm	4.5-5 mm
ER11-0216	5.5 mm	5-5.5 mm
ER11-0236	6 mm	5.5-6 mm
ER11-0255	6.5 mm	6-6.5 mm
ER11-0275	7 mm	6.5-7 mm

ER 11 METRIC SET

PART NUMBER	ER11-S013
NUMBER OF PIECES	13 PIECES
RANGE	.5 - 7 MM

ER 16 INCH

ER16-0062	1/16"	.0428"-.0625"
ER16-0093	3/32"	.0540"-.0937"
ER16-0125	1/8"	.0860"-.1250"
ER16-0157	5/32"	.1170"-.1560"
ER16-0187	3/16"	.1480"-.1870"
ER16-0218	7/32"	.1790"-.2180"
ER16-0250	1/4"	.2110"-.2500"
ER16-0281	9/32"	.2420"-.2810"
ER16-0312	5/16"	.2730"-.3120"
ER16-0343	11/32"	.3040"-.3430"
ER16-0375	3/8"	.3360"-.3750"
ER16-0406	13/32"	.3666"-.4062"

ER 16 INCH SET

PART NUMBER	ER16-S012
NUMBER OF PIECES	12 PIECES
RANGE	.0625" - .4062"

ER 16 METRIC

Part Number	Size	Range
ER16-0039	1 mm	.5-1 mm
ER16-0078	2 mm	1-2 mm
ER16-0098	2.5 mm	1.5-2.5 mm
ER16-0118	3 mm	2-3mm
ER16-0137	3.5 mm	2.5-3.5 mm
ER16-0157	4 mm	3-4 mm
ER16-0177	4.5 mm	4-4.5 mm
ER16-0196	5 mm	4-5 mm
ER16-0216	5.5 mm	4.5-5.5 mm
ER16-0236	6 mm	5-6 mm
ER16-0255	6.5 mm	5.5-6.5 mm
ER16-0275	7 mm	6-7 mm
ER16-0295	7.5 mm	7-7.5 mm
ER16-0315	8 mm	7-8 mm
ER16-0334	8.5 mm	8-8.5 mm
ER16-0354	9 mm	8-9 mm
ER16-0393	10 mm	9-10 mm

ER 16 METRIC SET

PART NUMBER	ER16-S010
NUMBER OF PIECES	10 PIECES
RANGE	1-10 mm

ER 20 INCH

ER20-0062	1/16"	.0428"-.0625"
ER20-0093	3/32"	.0540"-.0937"
ER20-0125	1/8"	.0860"-.1250"
ER20-0157	5/32"	.1170"-.1560"
ER20-0187	3/16"	.1480"-.1870"
ER20-0218	7/32"	.1790"-.2180"
ER20-0250	1/4"	.2110"-.2500"
ER20-0281	9/32"	.2420"-.2810"
ER20-0312	5/16"	.2730"-.3120"
ER20-0343	11/32"	.3040"-.3430"
ER20-0375	3/8"	.3360"-.3750"
ER20-0406	13/32"	.3666"-.4062"
ER20-0437	7/16"	.3980.4370"
ER20-0468	15/32"	.4290"-.4680"
ER20-0500	1/2"	.4610"-.5000"

ER 20 INCH SET

PART NUMBER	ER20-S014
NUMBER OF PIECES	14 PIECES
RANGE	.0937"-.5000"

ER 20 METRIC

ER20-0078	2 mm	1-2 mm
ER20-0118	3 mm	2-3 mm
ER20-0157	4 mm	3-4 mm

ER 20 METRIC

Part Number	Size	Range
ER20-0196	5 mm	4-5 mm
ER20-0236	6 mm	5-6 mm
ER20-0275	7 mm	6-7 mm
ER20-0315	8 mm	7-8 mm
ER20-0354	9 mm	8-9 mm
ER20-0393	10 mm	9-10 mm
ER20-0433	11 mm	10-11 mm
ER20-0472	12 mm	11-12 mm
ER20-0511	13 mm	12-13 mm

ER 20 METRIC SET

PART NUMBER	ER20-S012
NUMBER OF PIECES	12 PIECES
RANGE	2 - 13 mm

ER 25 INCH

ER25-0062	1/16"	.0428"-.0625"
ER25-0093	3/32"	.0540"-.0930"
ER25-0125	1/8"	.0860"-.1250"
ER25-0156	5/32"	.1170"-.1560"
ER25-0187	3/16"	.1480"-.1870"
ER25-0218	7/32"	.1790"-.2180"
ER25-0250	1/4"	.2110"-.2500"
ER25-0281	9/32"	.2420"-.2810"
ER25-0312	5/16"	.2730"-.3120"
ER25-0343	11/32"	.3040"-.3430"
ER25-0375	3/8"	.3360"-.3750"
ER25-0406	13/32"	.3666"-.4062"
ER25-0437	7/16"	.3980.4370"
ER25-0468	15/32"	.4290"-.4680"
ER25-0500	1/2"	.4610"-.5000"
ER25-0531	17/32"	.4920"-.5310"
ER25-0562	9/16"	.5230"-.5620"
ER25-0593	19/32"	.5544"-.5937"
ER25-0625	5/8"	.5860"-.6250"

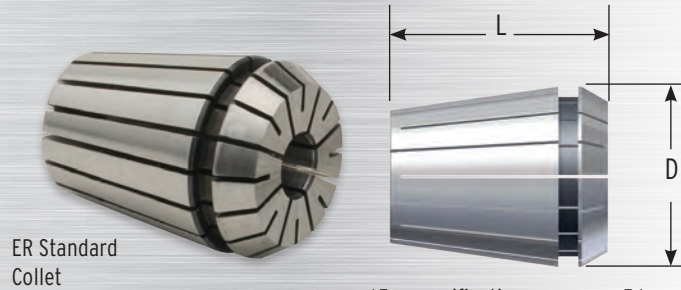
ER 25 INCH SET

PART NUMBER	ER25-S016
NUMBER OF PIECES	15 PIECES
RANGE	.1875"-.6250"

ER 25 METRIC

ER25-0039	1 mm	.5-1 mm
ER25-0078	2 mm	1-2 mm
ER25-0118	3 mm	2-3 mm
ER25-0157	4 mm	3-4 mm
ER25-0196	5 mm	4-5 mm
ER25-0236	6 mm	5-6 mm
ER25-0275	7 mm	6-7 mm

ER STANDARD COLLET



ER Standard Collet

*For specifications see page 54.

ER 25 METRIC

Part Number	Size	Range
ER25-0315	8 mm	7-8 mm
ER25-0354	9 mm	8-9 mm
ER25-0393	10 mm	9-10 mm
ER25-0433	11 mm	10-11 mm
ER25-0472	12 mm	11-12 mm
ER25-0511	13 mm	12-13 mm
ER25-0551	14 mm	13-14 mm
ER25-0590	15 mm	14-15 mm
ER25-0630	16 mm	15-16 mm

ER 25 METRIC SET

PART NUMBER	ER25-S015
NUMBER OF PIECES	15 PIECES
RANGE	2 - 16 mm

ER 32 INCH

ER32-0093	3/32"	.0540"-.0937"
ER32-0125	1/8"	.0860"-.1250"
ER32-0156	5/32"	.1170"-.1560"
ER32-0187	3/16"	.1480"-.1870"
ER32-0218	7/32"	.1790"-.2180"
ER32-0250	1/4"	.2110"-.2500"
ER32-0281	9/32"	.2420"-.2810"
ER32-0312	5/16"	.2730"-.3120"
ER32-0343	11/32"	.3040"-.3430"
ER32-0375	3/8"	.3360"-.3750"
ER32-0406	13/32"	.3666"-.4062"
ER32-0437	7/16"	.3980"-.4370"
ER32-0468	15/32"	.4290"-.4680"
ER32-0500	1/2"	.4610"-.5000"
ER32-0531	17/32"	.4920"-.5310"
ER32-0562	9/16"	.5230"-.5620"
ER32-0593	19/32"	.5544"-.5937"
ER32-0625	5/8"	.5860"-.6250"
ER32-0656	21/32"	.6170"-.6560"
ER32-0687	11/16"	.6480"-.6870"
ER32-0718	23/32"	.6794"-.7187"
ER32-0750	3/4"	.7110"-.7500"
ER32-0781	25/32"	.7419"-.7812"

ER 32 INCH SET

PART NUMBER	ER32-S021
NUMBER OF PIECES	21 PIECES
RANGE	1/8" - 3/4"

ER 32 METRIC

ER32-0118	3 mm	2-3 mm
ER32-0157	4 mm	3-4 mm
ER32-0196	5 mm	4-5 mm

ER 32 METRIC

Part Number	Size	Range
ER32-0236	6 mm	5-6 mm
ER32-0275	7 mm	6-7 mm
ER32-0315	8 mm	7-8 mm
ER32-0354	9 mm	8-9 mm
ER32-0393	10 mm	9-10 mm
ER32-0433	11 mm	10-11 mm
ER32-0472	12 mm	11-12 mm
ER32-0511	13 mm	12-13 mm
ER32-0551	14 mm	13-14 mm
ER32-0590	15 mm	14-15 mm
ER32-0630	16 mm	15-16 mm

ER 32 METRIC SET

PART NUMBER	ER40-S023
NUMBER OF PIECES	23 PIECES
RANGE	4 - 26 mm

ER 40 INCH

ER40-0125	1/8"	.0860"-.1250"
ER40-0187	3/16"	.1480"-.1870"
ER40-0218	7/32"	.1790"-.2180"
ER40-0250	1/4"	.2110"-.2500"
ER40-0281	9/32"	.2420"-.2810"
ER40-0312	5/16"	.2730"-.3120"
ER40-0343	11/32"	.3040"-.3430"
ER40-0375	3/8"	.3360"-.3750"
ER40-0406	13/32"	.3666"-.4062"
ER40-0437	7/16"	.3980"-.4370"
ER40-0468	15/32"	.4290"-.4680"
ER40-0500	1/2"	.4610"-.5000"
ER40-0531	17/32"	.4920"-.5310"
ER40-0562	9/16"	.5230"-.5620"
ER40-0593	19/32"	.5544"-.5937"
ER40-0625	5/8"	.5860"-.6250"
ER40-0656	21/32"	.6170"-.6560"
ER40-0687	11/16"	.6480"-.6870"
ER40-0718	23/32"	.6794"-.7187"
ER40-0750	3/4"	.7110"-.7500"
ER40-0781	25/32"	.7419"-.7812"
ER40-0812	13/16"	.7732"-.8125"
ER40-0843	27/32"	.8044"-.8437"
ER40-0875	7/8"	.8360"-.8750"
ER40-0906	29/32"	.868"-.906"
ER40-0937	15/16"	.8982"-.9375"
ER40-0968	31/32"	.9291"-.9685"
ER40-1000	1"	.9610"-.1.0000"

ER 40 INCH SET

PART NUMBER	ER40-S024
NUMBER OF PIECES	24 PIECES
RANGE	.2814"-.1.0000"

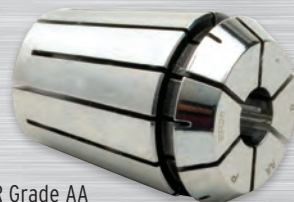
ER 40 METRIC

ER40-0157	4 mm	3-4 mm
ER40-0196	5 mm	4-5 mm
ER40-0236	6 mm	5-6 mm
ER40-0275	7 mm	6-7 mm
ER40-0315	8 mm	7-8 mm
ER40-0354	9 mm	8-9 mm
ER40-0393	10 mm	9-10 mm
ER40-0433	11 mm	10-11 mm
ER40-0472	12 mm	11-12 mm
ER40-0511	13 mm	12-13 mm
ER40-0551	14 mm	13-14 mm
ER40-0590	15 mm	14-15 mm
ER40-0630	16 mm	15-16 mm
ER40-0669	17 mm	16-17 mm
ER40-0708	18 mm	17-18 mm
ER40-0748	19 mm	18-19 mm
ER40-0787	20 mm	19-20 mm
ER40-0826	21 mm	20-21 mm
ER40-0866	22 mm	21-22 mm
ER40-0905	23 mm	22-23 mm
ER40-0944	24 mm	23-24 mm
ER40-0984	25 mm	24-25 mm
ER40-1023	26 mm	25-26 mm
ER40-1063	27 mm	26-27 mm
ER40-1102	28 mm	27-28 mm
ER40-1141	29 mm	28-29 mm
ER40-1181	30 mm	29-30 mm

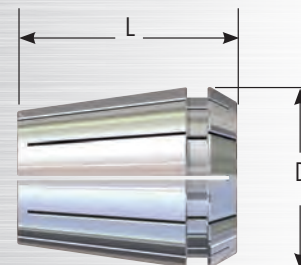
ER 40 METRIC SET

PART NUMBER	ER40-S023
NUMBER OF PIECES	23 PIECES
RANGE	4 - 26 mm

AA GRADE 5 MICRON ER PRECISION COLLET



ER Grade AA
5 Micron Collet



*For specifications see page 54.

ER 11 INCH

Part Number	Size	Range
5UMER11-0062	1/16"	.0428"-.0625"
5UMER11-0093	3/32"	.0740"-.0938"
5UMER11-0125	1/8"	.1053"-.1250"
5UMER11-0157	5/32"	.1378"-.1575"
5UMER11-0187	3/16"	.1678"-.1875"
5UMER11-0218	7/32"	.1990"-.2187"
5UMER11-0250	1/4"	.2303"-.2500"

ER 11 INCH SET

PART NUMBER	5UMER11-SI007
NUMBER OF PIECES	7 PIECES
RANGE	1/16" - 1/4"

ER 11 METRIC

5UMER11-0039	1 mm	.5-1 mm
5UMER11-0059	1.5 mm	1-1.5 mm
5UMER11-0078	2 mm	1.5-2 mm
5UMER11-0098	2.5 mm	2-2.5 mm
5UMER11-0118	3 mm	2.5-3 mm
5UMER11-0137	3.5 mm	3-3.5 mm
5UMER11-0157	4 mm	3.5-4 mm
5UMER11-0177	4.5 mm	4-4.5 mm
5UMER11-0196	5 mm	4.5-5 mm
5UMER11-0216	5.5 mm	5-5.5 mm
5UMER11-0236	6 mm	5.5-6 mm
5UMER11-0255	6.5 mm	6-6.5 mm
5UMER11-0275	7 mm	6.5-7 mm

ER 11 METRIC SET

PART NUMBER	5UMER11-SM013
NUMBER OF PIECES	13 PIECES
RANGE	.5 - 7 mm

ER 16 INCH

5UMER16-0062	1/16"	.0428"-.0625"
5UMER16-0093	3/32"	.0540"-.0937"
5UMER16-0125	1/8"	.0860"-.1250"
5UMER16-0157	5/32"	.1170"-.1560"
5UMER16-0187	3/16"	.1480"-.1870"
5UMER16-0218	7/32"	.1790"-.2180"
5UMER16-0250	1/4"	.2110"-.2500"
5UMER16-0281	9/32"	.2420"-.2810"
5UMER16-0312	5/16"	.2730"-.3120"
5UMER16-0343	11/32"	.3040"-.3430"
5UMER16-0375	3/8"	.3360"-.3750"
5UMER16-0406	13/32"	.3666"-.4062"

ER 16 INCH SET

PART NUMBER	5UMER16-SI010
NUMBER OF PIECES	10 PIECES
RANGE	.0625" - .4062"

ER 16 METRIC

Part Number	Size	Range
5UMER16-0039	1 mm	.5-1 mm
5UMER16-0078	2 mm	1-2 mm
5UMER16-0098	2.5 mm	1.5-2.5 mm
5UMER16-0118	3 mm	2-3 mm
5UMER16-0137	3.5 mm	2.5-3.5 mm
5UMER16-0157	4 mm	3-4 mm
5UMER16-0177	4.5 mm	4-4.5 mm
5UMER16-0196	5 mm	4-5 mm
5UMER16-0216	5.5 mm	4.5-5.5 mm
5UMER16-0236	6 mm	5-6 mm
5UMER16-0255	6.5 mm	5.5-6.5 mm
5UMER16-0275	7 mm	6-7 mm
5UMER16-0295	7.5 mm	7-7.5 mm
5UMER16-0315	8 mm	7-8 mm
5UMER16-0334	8.5 mm	8-8.5 mm
5UMER16-0354	9 mm	8-9 mm
5UMER16-0393	10 mm	9-10 mm

ER 16 METRIC SET

PART NUMBER	5UMER16-SM010
NUMBER OF PIECES	10 PIECES
RANGE	1 - 10 mm

ER 20 INCH

5UMER20-0062	1/16"	.0428"-.0625"
5UMER20-0093	3/32"	.0540"-.0937"
5UMER20-0125	1/8"	.0860"-.1250"
5UMER20-0157	5/32"	.1170"-.1560"
5UMER20-0187	3/16"	.1480"-.1870"
5UMER20-0218	7/32"	.1790"-.2180"
5UMER20-0250	1/4"	.2110"-.2500"
5UMER20-0281	9/32"	.2420"-.2810"
5UMER20-0312	5/16"	.2730"-.3120"
5UMER20-0343	11/32"	.3040"-.3430"
5UMER20-0375	3/8"	.3360"-.3750"
5UMER20-0406	13/32"	.3666"-.4062"
5UMER20-0437	7/16"	.3980"-.4370"
5UMER20-0468	15/32"	.4290"-.4680"
5UMER20-0500	1/2"	.4610"-.5000"

ER 20 INCH SET

PART NUMBER	5UMER20-SI009
NUMBER OF PIECES	9 PIECES
RANGE	.0937" - .5000"

ER 20 METRIC

5UMER20-0078	2 mm	1-2 mm
5UMER20-0118	3 mm	2-3 mm
5UMER20-0157	4 mm	3-4 mm

ER 20 METRIC

Part Number	Size	Range
5UMER20-0196	5 mm	4-5 mm
5UMER20-0236	6 mm	5-6 mm
5UMER20-0275	7 mm	6-7 mm
5UMER20-0315	8 mm	7-8 mm
5UMER20-0354	9 mm	8-9 mm
5UMER20-0393	10 mm	9-10 mm
5UMER20-0433	11 mm	10-11 mm
5UMER20-0472	12 mm	11-12 mm
5UMER20-0511	13 mm	12-13 mm

ER 20 METRIC SET

PART NUMBER	5UMER20-SM012
NUMBER OF PIECES	12 PIECES
RANGE	2 - 13 mm

ER 25 INCH

5UMER25-0062	1/16"	.0428"-.0625"
5UMER25-0093	3/32"	.0540"-.0930"
5UMER25-0125	1/8"	.0860"-.1250"
5UMER25-0156	5/32"	.1170"-.1560"
5UMER25-0187	3/16"	.1480"-.1870"
5UMER25-0218	7/32"	.1790"-.2180"
5UMER25-0250	1/4"	.2110"-.2500"
5UMER25-0281	9/32"	.2420"-.2810"
5UMER25-0312	5/16"	.2730"-.3120"
5UMER25-0343	11/32"	.3040"-.3430"
5UMER25-0375	3/8"	.3360"-.3750"
5UMER25-0406	13/32"	.3666"-.4062"
5UMER25-0437	7/16"	.3980"-.4370"
5UMER25-0468	15/32"	.4290"-.4680"
5UMER25-0500	1/2"	.4610"-.5000"
5UMER25-0531	17/32"	.4920"-.5310"
5UMER25-0562	9/16"	.5230"-.5620"
5UMER25-0593	19/32"	.5544"-.5937"
5UMER25-0625	5/8"	.5860"-.6250"

ER 25 INCH SET

PART NUMBER	5UMER25-SI011
NUMBER OF PIECES	12 PIECES
RANGE	.1875" - .06250"

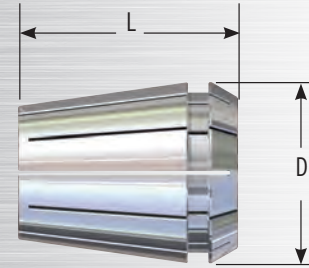
ER 25 METRIC

5UMER25-0039	1 mm	.5-1 mm
5UMER25-0078	2 mm	1-2 mm
5UMER25-0118	3 mm	2-3 mm
5UMER25-0157	4 mm	3-4 mm
5UMER25-0196	5 mm	4-5 mm
5UMER25-0236	6 mm	5-6 mm
5UMER25-0275	7 mm	6-7 mm

AA GRADE 5 MICRON ER PRECISION COLLET



ER Grade AA
5 Micron Collet



*For specifications see page 54.

ER 25 METRIC

Part Number	Size	Range
5UMER25-0315	6 mm	6-7 mm
5UMER25-0354	7 mm	7-8 mm
5UMER25-0393	8 mm	8-9 mm
5UMER25-0433	9 mm	9-10 mm
5UMER25-0472	10 mm	10-11 mm
5UMER25-0511	11 mm	11-12 mm
5UMER25-0551	12 mm	12-13 mm
5UMER25-0590	13 mm	13-14 mm
5UMER25-0630	14 mm	15-16 mm

ER 25 METRIC SET

PART NUMBER	5UMER25-SM015
NUMBER OF PIECES	15 PIECES
RANGE	2 - 16 mm

ER 32 INCH

5UMER32-0093	3/32"	.0540"-.0937"
5UMER32-0125	1/8"	.0860"-.1250"
5UMER32-0156	5/32"	.1170"-.1560"
5UMER32-0187	3/16"	.1480"-.1870"
5UMER32-0218	7/32"	.1790"-.2180"
5UMER32-0250	1/4"	.2110"-.2500"
5UMER32-0281	9/32"	.2420"-.2810"
5UMER32-0312	5/16"	.2730"-.3120"
5UMER32-0343	11/32"	.3040"-.3430"
5UMER32-0375	3/8"	.3360"-.3750"
5UMER32-0406	13/32"	.3666"-.4062"
5UMER32-0437	7/16"	.3980"-.4370"
5UMER32-0468	15/32"	.4290"-.4680"
5UMER32-0500	1/2"	.4610"-.5000"
5UMER32-0531	17/32"	.4920"-.5310"
5UMER32-0562	9/16"	.5230"-.5620"
5UMER32-0593	19/32"	.5544"-.5937"
5UMER32-0625	5/8"	.5860"-.6250"
5UMER32-0656	21/32"	.6170"-.6560"
5UMER32-0687	11/16"	.6480"-.6870"
5UMER32-0718	23/32"	.6794"-.7187"
5UMER32-0750	3/4"	.7110"-.7500"
5UMER32-0781	25/32"	.7419"-.7812"

ER 32 INCH SET

PART NUMBER	5UMER32-SI014
NUMBER OF PIECES	14 PIECES
RANGE	.1250"-.7500"

ER 32 METRIC

Part Number	Size	Range
5UMER32-0118	3 mm	2-3 mm
5UMER32-0157	4 mm	3-4 mm
5UMER32-0196	5 mm	4-5 mm
5UMER32-0236	6 mm	5-6 mm
5UMER32-0275	7 mm	6-7 mm
5UMER32-0315	8 mm	7-8 mm
5UMER32-0354	9 mm	8-9 mm
5UMER32-0393	10 mm	9-10 mm
5UMER32-0433	11 mm	10-11 mm
5UMER32-0472	12 mm	11-12 mm
5UMER32-0511	13 mm	12-13 mm
5UMER32-0551	14 mm	13-14 mm
5UMER32-0590	15 mm	14-15 mm
5UMER32-0630	16 mm	15-16 mm
5UMER32-0669	17 mm	16-17 mm
5UMER32-0708	18 mm	17-18 mm
5UMER32-0748	19 mm	18-19 mm
5UMER32-0787	20 mm	19-20 mm

ER 32 METRIC SET

PART NUMBER	5UMER32-SM018
NUMBER OF PIECES	18 PIECES
RANGE	3 - 20 mm

ER 40 INCH

5UMER40-0125	1/8"	.0860"-.1250"
5UMER40-0187	3/16"	.1480"-.1870"
5UMER40-0218	7/32"	.1790"-.2180"
5UMER40-0250	1/4"	.2110"-.2500"
5UMER40-0281	9/32"	.2420"-.2810"
5UMER40-0312	5/16"	.2730"-.3120"
5UMER40-0343	11/32"	.3040"-.3430"
5UMER40-0375	3/8"	.3360"-.3750"
5UMER40-0406	13/32"	.3666"-.4062"
5UMER40-0437	7/16"	.3980"-.4370"
5UMER40-0468	15/32"	.4290"-.4680"
5UMER40-0500	1/2"	.4610"-.5000"
5UMER40-0531	17/32"	.4920"-.5310"
5UMER40-0562	9/16"	.5230"-.5620"
5UMER40-0593	19/32"	.5544"-.5937"
5UMER40-0625	5/8"	.5860"-.6250"
5UMER40-0656	21/32"	.6170"-.6560"
5UMER40-0687	11/16"	.6480"-.6870"
5UMER40-0718	23/32"	.6794"-.7187"
5UMER40-0750	3/4"	.7110"-.7500"
5UMER40-0781	25/32"	.7419"-.7812"

ER 40 INCH

Part Number	Size	Range
5UMER40-0812	13/16"	.7732"-.8125"
5UMER40-0843	27/32"	.8044"-.8437"
5UMER40-0875	7/8"	.8360"-.8750"
5UMER40-0906	29/32"	.868"-.906"
5UMER40-0937	15/16"	.8982"-.9375"
5UMER40-0968	31/32"	.9291"-.9685"
5UMER40-1000	1"	.9610"-.1.0000"

ER 40 INCH SET

PART NUMBER	5UMER40-SI016
NUMBER OF PIECES	16 PIECES
RANGE	.2814" - 1.0000"

ER 40 METRIC

5UMER40-0157	4 mm	3-4 mm
5UMER40-0196	5 mm	4-5 mm
5UMER40-0236	6 mm	5-6 mm
5UMER40-0275	7 mm	6-7 mm
5UMER40-0315	8 mm	7-8 mm
5UMER40-0354	9 mm	8-9 mm
5UMER40-0393	10 mm	9-10 mm
5UMER40-0433	11 mm	10-11 mm
5UMER40-0472	12 mm	11-12 mm
5UMER40-0511	13 mm	12-13 mm
5UMER40-0551	14 mm	13-14 mm
5UMER40-0590	15 mm	14-15 mm
5UMER40-0630	16 mm	15-16 mm
5UMER40-0669	17 mm	16-17 mm
5UMER40-0708	18 mm	17-18 mm
5UMER40-0748	19 mm	18-19 mm
5UMER40-0787	20 mm	19-20 mm
5UMER40-0826	21 mm	20-21 mm
5UMER40-0866	22 mm	21-22 mm
5UMER40-0905	23 mm	22-23 mm
5UMER40-0944	24 mm	23-24 mm
5UMER40-0984	25 mm	24-25 mm
5UMER40-1023	26 mm	25-26 mm
5UMER40-1063	27 mm	26-27 mm
5UMER40-1102	28 mm	27-28 mm
5UMER40-1141	29 mm	28-29 mm
5UMER40-1181	30 mm	29-30 mm

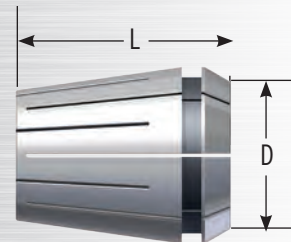
ER 40 METRIC SET

PART NUMBER	5UMER40-SM023
NUMBER OF PIECES	23 PIECES
RANGE	4 - 26 mm

ERS STEEL SEALED COLLETS



ERS Steel
Sealed Collet



*For specifications see page 54.

ER 16 INCH

Part Number	Range
ERS16-0125	1/8"
ERS16-0157	5/32"
ERS16-0187	3/16"
ERS16-0218	7/32"
ERS16-0250	1/4"
ERS16-0281	9/32"
ERS16-0312	5/16"
ERS16-0343	11/32"
ERS16-0375	3/8"
ERS16-0406	13/32"

ER 16 INCH SET

PART NUMBER	ERS16-S010
NUMBER OF PIECES	10 PIECES
RANGE	1/8"-13/32"

ER 16 METRIC

ERS16-0157	4 mm
ERS16-0196	5 mm
ERS16-0236	6 mm
ERS16-0275	7 mm
ERS16-0315	8 mm
ERS16-0354	9 mm
ERS16-0393	10 mm
ERS16-S007	4-10 mm

ER 16 METRIC SET

PART NUMBER	ERS16-S007
NUMBER OF PIECES	7 PIECES
RANGE	4 - 10 mm

ER 20 INCH

ERS20-0157	5/32"
ERS20-0157	5/32"
ERS20-0187	-
ERS20-0218	7/32"
ERS20-0250	1/4"
ERS20-0281	9/32"
ERS20-0312	5/16"
ERS20-0343	11/32"
ERS20-0375	3/8"
ERS20-0406	13/32"
ERS20-0437	7/16"
ERS20-0500	1/2"

ER 20 INCH SET

PART NUMBER	ERS20-S011
NUMBER OF PIECES	11 PIECES
RANGE	5/31" - 1/2"

ER 20 METRIC

ERS20-0157	4 mm
ERS20-0196	5 mm
ERS20-0236	6 mm
ERS20-0275	7 mm

ER 20 METRIC

Part Number	Range
ERS20-0315	8 mm
ERS20-0354	9 mm
ERS20-0393	10 mm
ERS20-0433	11 mm
ERS20-0472	12 mm
ERS20-0511	13 mm

ER 20 METRIC SET

PART NUMBER	ERS20-S010
NUMBER OF PIECES	10 PIECES
RANGE	2 - 13 mm

ER 25 INCH

ERS25-0157	5/32"
ERS25-0187	3/16"
ERS25-0218	7/32"
ERS25-0250	1/4"
ERS25-0281	9/32"
ERS25-0312	5/16"
ERS25-0343	11/32"
ERS25-0375	3/8"
ERS25-0406	13/32"
ERS25-0437	7/16"
ERS25-0468	15/32"
ERS25-0500	1/2"
ERS25-0531	17/32"
ERS25-0562	5/8"
ERS25-0593	19/32"
ERS25-0625	5/8"

ER 25 INCH SET

PART NUMBER	ERS25-S016
NUMBER OF PIECES	16 PIECES
RANGE	5/32" - 5/8"

ER 25 METRIC

ERS25-0157	5 mm
ERS25-0196	5 mm
ERS25-0236	6 mm
ERS25-0275	7 mm
ERS25-0315	8 mm
ERS25-0354	9 mm
ERS25-0393	10 mm
ERS25-0433	11 mm
ERS25-0472	12 mm
ERS25-0511	13 mm
ERS25-0551	14mm
ERS25-0590	15mm
ERS25-0630	16 mm

ER 25 METRIC SET

PART NUMBER	ERS25-S013
NUMBER OF PIECES	13 PIECES
RANGE	4 - 16 mm

ER 32 INCH

Part Number	Range
ERS32-0157	5/32"
ERS32-0187	3/16"
ERS32-0218	7/32"
ERS32-0250	1/4"
ERS32-0281	9/32"
ERS32-0312	5/16"
ERS32-0343	11/32"
ERS32-0375	3/8"
ERS32-0406	13/32"
ERS32-0437	7/16"
ERS32-0468	15/32"
ERS32-0500	1/2"
ERS32-0531	17/32"
ERS32-0562	5/8"
ERS32-0593	19/32"
ERS32-0625	5/8"
ERS32-0656	21/32"
ERS32-0687	11/32"
ERS32-0718	23/32"
ERS32-0750	3/4"
ERS32-0781	25/32"

ER 32 INCH SET

PART NUMBER	ERS32-S021
NUMBER OF PIECES	10 PIECES
RANGE	5/32"-25/32"

ER 32 METRIC

ERS32-0157	4 mm
ERS32-0196	5 mm
ERS32-0236	6 mm
ERS32-0275	7 mm
ERS32-0315	8 mm
ERS32-0354	9 mm
ERS32-0393	10 mm
ERS32-0433	11 mm
ERS32-0472	12 mm
ERS32-0511	13 mm
ERS32-0551	14 mm
ERS32-0590	15 mm
ERS32-0630	16 mm
ERS32-0669	17 mm
ERS32-0708	18 mm
ERS32-0748	19 mm
ERS32-0787	20 mm

ER 32 METRIC SET

PART NUMBER	ERS32-S017
NUMBER OF PIECES	17 PIECES
RANGE	4 - 20 mm

ER 40 INCH

ERS40-0250	1/4"
ERS40-0281	9/32"

ER 40 INCH

Part Number	Range
ERS40-0312	5/16"
ERS40-0343	11/32"
ERS40-0375	3/8"
ERS40-0406	13/32"
ERS40-0437	7/16"
ERS40-0468	15/32"
ERS40-0500	1/2"
ERS40-0531	17/32"
ERS40-0562	5/8"
ERS40-0593	19/32"
ERS40-0625	5/8"
ERS40-0656	21/32"
ERS40-0687	11/32"
ERS40-0718	23/32"
ERS40-0750	3/4"
ERS40-0781	25/32"
ERS40-0875	7/8"
ERS40-1000	1"

ER 40 INCH SET

PART NUMBER	ERS40-S020
NUMBER OF PIECES	20 PIECES
RANGE	1/4" - 1"

ER 40 METRIC

ERS40-0236	6 mm
ERS40-0275	7 mm
ERS40-0315	8 mm
ERS40-0354	9 mm
ERS40-0393	10 mm
ERS40-0433	11 mm
ERS40-0472	12 mm
ERS40-0511	13 mm
ERS40-0551	14 mm
ERS40-0590	15 mm
ERS40-0630	16 mm
ERS40-0669	17 mm
ERS40-0708	18 mm
ERS40-0748	19 mm
ERS40-0787	20 mm
ERS40-0826	21 mm
ERS40-0866	22 mm
ERS40-0905	23 mm
ERS40-0944	24 mm
ERS40-0984	25 mm
ERS40-1023	26 mm

ER 40 METRIC SET

PART NUMBER	ERS40-S021
NUMBER OF PIECES	21 PIECES
RANGE	6 - 26 mm

ER COOLANT NUT SEALS



Coolant Nut Seal

ER 16 METRIC/INCH

Part Number	Metric Range	Inch Range
CS16-0138	3-3.5 mm	0.1181-.1378
CS16-0157	3.5-4 mm	0.1378-.1575
CS16-0177	4-4.5 mm	0.1575-.1772
CS16-0197	4.5-5 mm	0.1772-.1969
CS16-0217	5-5.5 mm	0.1969-.2165
CS16-0236	5.5-6 mm	0.2165-.2362
CS16-0256	6-6.5 mm	0.2362-.2559
CS16-0276	6.5-7 mm	0.2559-.2756
CS16-0295	7-7.5 mm	0.2756-.2953
CS16-0315	7.5-8 mm	0.2953-.3150
CS16-0335	8-8.5 mm	0.3150-.3346
CS16-0354	8.5-9 mm	0.3346-.3543
CS16-0374	9-9.5 mm	0.3543-.3740
CS16-0394	9.5-10 mm	0.3740-.3937

ER 20 METRIC/INCH

Part Number	Metric Range	Inch Range
CS20-0138	3-3.5 mm	0.1181-.1378
CS20-0157	3.5-4 mm	0.1378-.1575
CS20-0177	4-4.5 mm	0.1575-.1772
CS20-0197	4.5-5 mm	0.1772-.1969
CS20-0217	5-5.5 mm	0.1969-.2165
CS20-0236	5.5-6 mm	0.2165-.2362
CS20-0256	6-6.5 mm	0.2362-.2559
CS20-0276	6.5-7 mm	0.2559-.2756
CS20-0295	7-7.5 mm	0.2756-.2953
CS20-0315	7.5-8 mm	0.2953-.3150
CS20-0335	8-8.5 mm	0.3150-.3346
CS20-0354	8.5-9 mm	0.3346-.3543
CS20-0374	9-9.5 mm	0.3543-.3740
CS20-0394	9.5-10 mm	0.3740-.3937
CS20-0413	10-10.5 mm	0.3937-.4134
CS20-0433	10-5-11 mm	0.4134-.4331
CS20-0453	11-11.5 mm	0.4331-.4528
CS20-0472	11-5-12 mm	0.4528-.4724
CS20-0492	12-12.5 mm	0.4724-.4921
CS20-0512	12.5-13 mm	0.4921-.5118

ER 25 METRIC/INCH

Part Number	Metric Range	Inch Range
CS25-0138	3-3.5 mm	0.1181-.1378
CS25-0157	3.5-4 mm	0.1378-.1575
CS25-0177	4-4.5 mm	0.1575-.1772
CS25-0197	4.5-5 mm	0.1772-.1969
CS25-0217	5-5.5 mm	0.1969-.2165
CS25-0236	5.5-6 mm	0.2165-.2362
CS25-0256	6-6.5 mm	0.2362-.2559
CS25-0276	6.5-7 mm	0.2559-.2756
CS25-0295	7-7.5 mm	0.2756-.2953
CS25-0315	7.5-8 mm	0.2953-.3150
CS25-0335	8-8.5 mm	0.3150-.3346
CS25-0354	8.5-9 mm	0.3346-.3543
CS25-0374	9-9.5 mm	0.3543-.3740

ER 25 METRIC/INCH

Part Number	Metric Range	Inch Range
CS25-0374	9-9.5 mm	0.3543-.3740
CS25-0394	9.5-10 mm	0.3740-.3937
CS25-0413	10-10.5 mm	0.3937-.4134
CS25-0433	10-5-11 mm	0.4134-.4331
CS25-0453	11-11.5 mm	0.4331-.4528
CS25-0472	11-5-12 mm	0.4528-.4724
CS25-0492	12-12.5 mm	0.4724-.4921
CS25-0512	12.5-13 mm	0.4921-.5118
CS25-0531	13-13.5 mm	0.5118-.5315
CS25-0551	13.5-14 mm	0.5315-.5512
CS25-0571	14-14.5 mm	0.5512-.5709
CS25-0591	14.5-15 mm	0.5709-.5906
CS25-0610	15-15.5 mm	0.5906-.6102
CS25-0630	15.5-16 mm	0.6102-.6299

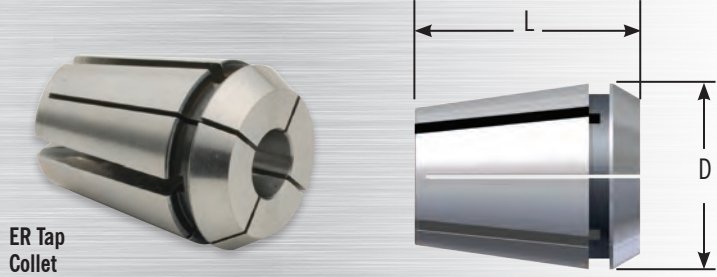
ER 32 METRIC/INCH

Part Number	Metric Range	Inch Range
CS32-0138	3-3.5 mm	0.1181-.1378
CS32-0157	3.5-4 mm	0.1378-.1575
CS32-0177	4-4.5 mm	0.1575-.1772
CS32-0197	4.5-5 mm	0.1772-.1969
CS32-0217	5-5.5 mm	0.1969-.2165
CS32-0236	5.5-6 mm	0.2165-.2362
CS32-0256	6-6.5 mm	0.2362-.2559
CS32-0276	6.5-7 mm	0.2559-.2756
CS32-0295	7-7.5 mm	0.2756-.2953
CS32-0315	7.5-8 mm	0.2953-.3150
CS32-0335	8-8.5 mm	0.3150-.3346
CS32-0354	8.5-9 mm	0.3346-.3543
CS32-0374	9-9.5 mm	0.3543-.3740
CS32-0394	9.5-10 mm	0.3740-.3937
CS32-0413	10-10.5 mm	0.3937-.4134
CS32-0433	10-5-11 mm	0.4134-.4331
CS32-0453	11-11.5 mm	0.4331-.4528
CS32-0472	11-5-12 mm	0.4528-.4724
CS32-0492	12-12.5 mm	0.4724-.4921
CS32-0512	12.5-13 mm	0.4921-.5118
CS32-0531	13-13.5 mm	0.5118-.5315
CS32-0551	13.5-14 mm	0.5315-.5512
CS32-0571	14-14.5 mm	0.5512-.5709
CS32-0591	14.5-15 mm	0.5709-.5906
CS32-0610	15-15.5 mm	0.5906-.6102
CS32-0630	15.5-16 mm	0.6102-.6299
CS32-0650	16-16.5 mm	0.6299-.6496
CS32-0669	16.5-17 mm	0.6496-.6693
CS32-0689	17-17.5 mm	0.6693-.6890
CS32-0709	17.5-18 mm	0.689-.7087
CS32-0728	18-18.5 mm	0.7087-.7283
CS32-0748	18.5-19 mm	0.7283-.7480
CS32-0768	19-19.5 mm	0.7480-.7677
CS32-0787	19.5-20 mm	0.7677-.7874

ER 40 METRIC/INCH

Part Number	Metric Range	Inch Range
CS40-0138	3-3.5 mm	0.1181-.1378
CS40-0157	3.5-4 mm	0.1378-.1575
CS40-0177	4-4.5 mm	0.1575-.1772
CS40-0197	4.5-5 mm	0.1772-.1969
CS40-0217	5-5.5 mm	0.1969-.2165
CS40-0236	5.5-6 mm	0.2165-.2362
CS40-0256	6-6.5 mm	0.2362-.2559
CS40-0276	6.5-7 mm	0.2559-.2756
CS40-0295	7-7.5 mm	0.2756-.2953
CS40-0315	7.5-8 mm	0.2953-.3150
CS40-0335	8-8.5 mm	0.3150-.3346
CS40-0354	8.5-9 mm	0.3346-.3543
CS40-0374	9-9.5 mm	0.3543-.3740
CS40-0394	9.5-10 mm	0.3740-.3937
CS40-0413	10-10.5 mm	0.3937-.4134
CS40-0433	10-5-11 mm	0.4134-.4331
CS40-0453	11-11.5 mm	0.4331-.4528
CS40-0472	11-5-12 mm	0.4528-.4724
CS40-0492	12-12.5 mm	0.4724-.4921
CS40-0512	12.5-13 mm	0.4921-.5118
CS40-0531	13-13.5 mm	0.5118-.5315
CS40-0551	13.5-14 mm	0.5315-.5512
CS40-0571	14-14.5 mm	0.5512-.5709
CS40-0591	14.5-15 mm	0.5709-.5906
CS40-0610	15-15.5 mm	0.5906-.6102
CS40-0630	15.5-16 mm	0.6102-.6299
CS40-0650	16-16.5 mm	0.6299-.6496
CS40-0669	16.5-17 mm	0.6496-.6693
CS40-0689	17-17.5 mm	0.6693-.6890
CS40-0709	17.5-18 mm	0.6890-.7087
CS40-0728	18-18.5 mm	0.7087-.7283
CS40-0748	18.5-19 mm	0.7283-.7480
CS40-0768	19-19.5 mm	0.7480-.7677
CS40-0787	19.5-20 mm	0.7677-.7874
CS40-0807	20-20.5 mm	0.7874-.8071
CS40-0826	20.5-21 mm	0.8071-.8268
CS40-0846	21-21.5 mm	0.8268-.8465
CS40-0866	21.5-22 mm	0.8465-.8661
CS40-0885	22-22.5 mm	0.8661-.8858
CS40-0905	22.5-23 mm	0.8858-.9055
CS40-0925	23-23.5 mm	0.9055-.9252
CS40-0944	23.5-24 mm	0.9252-.9449
CS40-0964	24-24.5 mm	0.9449-.9646
CS40-0984	24.5-25 mm	0.9646-.9843
CS40-1003	25-25.5 mm	0.9843-1.0039
CS40-1023	25.5-26 mm	1.0039-1.0236

ER TAP COLLETS



ER Tap Collet

*For specifications see page 54.

ER 16 INCH/METRIC

Part Number	Inch Size	ANSI Metric
ERT16-#0-6	#0-#6	-
ERT16-#8	#8	M4
ERT16-#10	#10	M4.5, M5
ERT16-#12	#12	-
ERT16-025	1/4"	M6,M6.5
ERT16-031	5/16"	M7, M8
ERT16-037	3/8"	M10
ERT16-043	7/16"	-
ERT16-050	1/2"	M12,M12.5

ER 16 INCH/METRIC SET

PART NUMBER	ERT16-S009
NUMBER OF PIECES	9 PIECES
RANGE	#0-1/2"

ER 20 INCH/METRIC

ERT20-#8	#8	M4
ERT20-#10	#10	M4.5, M5
ERT20-#12	#12	-
ERT20-025	1/4"	M6,M6.5
ERT20-031	5/16"	M7, M8
ERT20-037	3/8"	M10
ERT20-043	7/16"	-
ERT20-050	1/2"	M12,M12.5

ER 20 INCH/METRIC SET

PART NUMBER	ERT20-S008
NUMBER OF PIECES	8 PIECES
RANGE	#8-1/2"

ER 25 INCH/METRIC

ERT25-#8	#8	M4
ERT25-#10	#10	M4.5, M5
ERT25-#12	#12	-
ERT25-012N	1/8" NPT	-

ER 25 INCH/METRIC

Part Number	Inch Size	ANSI Metric
ERT25-025	1/4"	M6,M6.5
ERT25-031	5/16"	M7, M8
ERT25-037	3/8"	M10
ERT25-043	7/16"	-
ERT25-050	1/2"	M12,M12.5
ERT25-056	9/16"	M14
ERT25-062	5/8"	M16

ER 25 INCH/METRIC SET

PART NUMBER	ERT25-S011
NUMBER OF PIECES	11 PIECES
RANGE	#8-5/8"

ER 32 INCH/METRIC

ERT32-#0-6	#0-#6	-
ERT32-#8	#8	M4
ERT32-#10	#10	M4.5, M5
ERT32-#12	#12	-
ERT32-012N	1/8" NPT	-
ERT32-025	1/4"	M6,M6.5
ERT32-025N	1/4" NPT	-
ERT32-031	5/16"	M7, M8
ERT32-037	3/8"	M10
ERT32-043	7/16"	-
ERT32-050	1/2"	M12,M12.5
ERT32-056	9/16"	M14
ERT32-062	5/8"	M16
ERT32-068	11/16"	M18
ERT32-075	3/4"	-
ERT32-081	13/16"	M20

ER 32 INCH/METRIC SET

PART NUMBER	ERT32-S016
NUMBER OF PIECES	16 PIECES
RANGE	#6-13/16"

ER 40 INCH/METRIC

Part Number	Inch Size	ANSI Metric
ERT40-012N	1/8" NPT	-
ERT40-025	1/4"	M6,M6.5
ERT40-025N	1/4" NPT	-
ERT40-031	5/16"	M7, M8
ERT40-037	3/8"	M10
ERT40-037N	3/8" NPT	-
ERT40-043	7/16"	-
ERT40-050	1/2"	M12,M12.5
ERT40-050N	1/2" NPT	-
ERT40-056	9/16"	M14
ERT40-062	5/8"	M16
ERT40-068	11/16"	M18
ERT40-075	3/4"	-
ERT40-081	13/16"	M20
ERT40-087	7/8"	M22
ERT40-093	15/16"	M24
ERT40-100	1"	M25

ER 40 INCH/METRIC SET

PART NUMBER	ERT40-S017
NUMBER OF PIECES	17 PIECES
RANGE	1/4" - 1"

ER COLLET NUT SELECTION

STANDARD DIN STYLE NUT	<ul style="list-style-type: none"> Conforms to ISO 15488. Solid one piece durable construction. Coated seat angle reduces friction improving grip force. Designed with balance compensation of retraction clip.
ER POWER NUT	<ul style="list-style-type: none"> Exceeds ISO 15488. Friction Race design improves concentricity and grip force. Two piece construction eliminates the torsional force on the collet during clamping. Floating race prevents miss alignment between clamping race and collet angle.

ER COLLET NUT SELECTION WITH COOLANT OPTIONS

STANDARD DIN STYLE NUT	<ul style="list-style-type: none"> Used in conjunction with Steel Sealed Collets.
POWER NUT	<ul style="list-style-type: none"> Used in conjunction with Steel Sealed Collets.
COOLANT NUT SEAL SYSTEM (Coolant Seals see page 65)	<ul style="list-style-type: none"> Exceeds ISO 15488. Used in conjunction with Coolant Nut Seals. Prevents chips and dust from backing up into collet system. Acts as a coolant concentrator to deliver coolant along the shaft of the cutting tools.



STANDARD DIN STYLE NUT FOR MINIMUM OVERHANG

ER Size	Part Number	ER Size	B	Size and Style	Standard Wrench	Torque Wrench Nose	Torque
ER11	11ERHN	ER11	0.75	1 1/16" Hex	300CNW	-	22 ft.lbs.
ER16	16ERHN	ER16	1.11	1" Hex	ECN20W	TWN-16ERHNW	52 ft.lbs.
ER20	20ERHN	ER20	1.34	1 3/16" Hex	20ERHNW	TWN-20ERHNW	74 ft.lbs.
ER25	25ERN	ER25	1.67	Spanner	25ERNW	TWN-25ERNW	95 ft.lbs.
ER32	32ERN	ER32	1.97	Spanner	32ERNW	TWN-32ERNW	125 ft.lbs.
ER40	40ERN	ER40	2.47	Spanner	40ERNW	TWN-40ERNW	162 ft.lbs.

POWER NUTS FOR MAXIMUM GRIP FORCE AND CONCENTRICITY

ER16	16ERHPN	ER16	1.11	1" Hex	ECN20W	TWN-16ERHPNW	42 ft.lbs.
ER20	20ERHPN	ER20	1.34	1 3/16" Hex	20ERHPNW	TWN-20ERHPNW	60 ft.lbs.
ER25	25ERP	ER25	1.67	Spanner	25ERNW	TWN-25ERNW	86 ft.lbs.
ER32	32ERP	ER32	1.97	Spanner	32ERNW	TWN-32ERNW	100 ft.lbs.
ER40	40ERP	ER40	2.47	Spanner	40ERNW	TWN-40ERNW	146 ft.lbs.

COOLANT NUTS FOR USE WITH COOLANT NUT SEALS

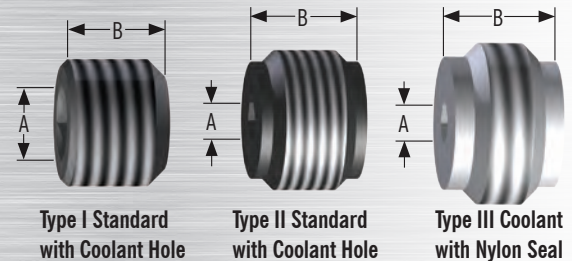
ER16	16ERHCN	ER16	1.11	1" Hex	ECN20W	TWN-16ERHCNW	52 ft.lbs.
ER20	20ERHCN	ER20	1.34	1 3/16" Hex	20ERHCNW	TWN-20ERHCNW	74 ft.lbs.
ER25	25ERCN	ER25	1.67	Spanner	25ERNW	TWN-25ERNW	95 ft.lbs.
ER32	32ERCN	ER32	1.97	Spanner	32ERNW	TWN-32ERNW	125 ft.lbs.
ER40	40ERCN	ER40	2.47	Spanner	40ERNW	TWN-40ERNW	162 ft.lbs.

ER Collet Chuck Accessories

High Precision Toolholding Solutions

ER TYPE I & II BACK-UP SCREWS

Type I Part Number	Type II Part Number	A	B	Thread Left Hand
029-909	-	5/32"	1/4"	5/16"-24
-	BS-09	3/16"	9/16"	9/16"-18
-	BS-10	3/16"	9/16"	1 1/8"-16
-	BS-11	5/16"	9/16"	11/16"-16
-	BS-18	3/16"	9/16"	13/16"-16
-	BS-20	7/32"	3/8"	7/16"-20



STANDARD WRENCHES

Collet Series	Part Number	Style
ER11	300CNW	Hex
ER16	ECN20W	Hex
ER20	20ERHNW	Hex
ER20	20ERNW	Spanner
ER25	25ERNW	Spanner
ER25	25ERENW	Spanner
ER32	32ERNW	Spanner
ER40	40ERNW	Spanner



TORQUE WRENCHES

Part Number	Range	Length
TW-45	5 - 45 ft. lbs.	12
TW-150	30 - 150 ft. lbs.	16.6
TW-220	45 - 220 ft. lbs.	22.2



TORQUE WRENCH NOSES

Nut Size	Part Number	Style
ER 16	TWN-16ERHNW	Hex
ER 20	TWN-20ERHNW	Hex
ER 25	TWN-25ERNW	Spanner
ER 32	TWN-32ERNW	Spanner
ER 40	TWN-40ERNW	Spanner



Notes

64 High Precision Toolholding Solutions



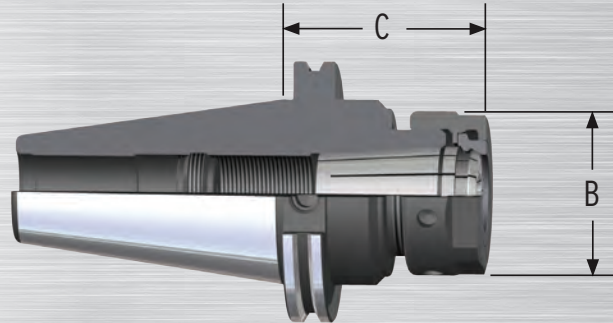


PRODUCTION COLLET CHUCKS:

- First level quality and service
- Available in a variety of coolant entry and delivery configurations
- Toolholding Accessories
- Available with Simulfit (dual contact) tapers
 - CAT, BT and HSK

Single-Angle Collet Chucks

SINGLE-ANGLE COLLET CHUCKS



BT TAPER

BT 30 (0.310" - 0.750"/.8 MM - 19 MM)

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Back-Up Screw (Incl.)	Nut Torque
75 PG	B30-75SC295	2.10	2.95	-	75HCN	BS-18	60 ft./lbs.

BT 40 (0.310" - 1.000"/.8 MM - 25.4 MM)

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Back-Up Screw (Incl.)	Nut Torque
75 PG	B40-75SC3	2.10	2.75	3.00"	75HCN	BS-18	60 ft./lbs.
100 PG	B40-10SC3	2.44	3.00	3.40"	100HCN	BS-10	
	B40-10SC5						

CAT TAPER

CAT 40 (0.310" - 1.500"/.8 MM - 38.1 MM)

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Back-Up Screw (Incl.)	Nut Torque
75 PG	C40-75SC3	2.10	3.00	3.00"	75HCN	BS-18	60 ft./lbs.
100 PG	C40-10SC3		3.00	3.35"	100HCN	BS-10	
	C40-10SC5	2.44	5.00	4.54"	100HCN	BS-10	
	C40-10SC6		6.50	6.00"	100HCN	BS-10	
150 PG	C40-15SC4	3.43	4.88"	4.21"	15CN	BS-15	70 ft./lbs.

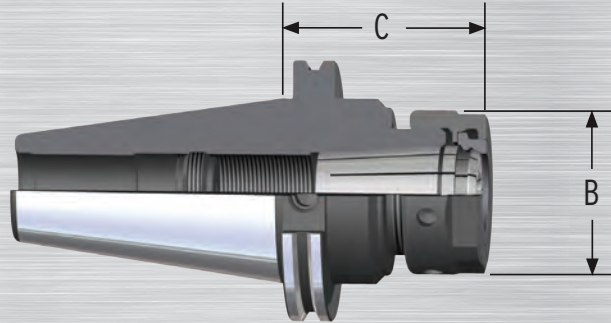
CAT 50 (0.310" - 1.500"/.8 MM - 38.1 MM)

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Back-Up Screw (Incl.)	Nut Torque
100 PG	C50-10SC3		3.00	4.00"	100HCN	BS-10	60 ft./lbs.
	C50-10SC4	2.44	3.50	4.25"	100HCN	BS-10	
	C50-10SC5		5.50	5.89"	100HCN	BS-10	
	C50-10SC7		7.50	5.50"	100HCN	BS-10	
150 PG	C50-15SC3		3.00	3.50"	15CN	BS-15	74 ft./lbs.
	C50-15SC4	3.43	3.50	4.00"	15CN	BS-15	
	C50-15SC5		5.50	-	15CN	BS-15	
	C50-15SC7		7.50	5.89"	15CN	BS-15	

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

Single-Angle Collet Chucks

SINGLE-ANGLE COLLET CHUCKS



CAT TAPER WITH AD/B COOLANT

CAT 40 (0.310" - 1.000"/.8 MM - 25.4 MM)

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Back-Up Screw (Incl.)	Nut Torque
75 PG	C40BC-75SC300	2.10	3.00	3.00	75HCN	BS-18	60 ft./lbs.
	C40BC-75SC600		6.00				
100 PG	C40BC-10SC300	2.44	3.00	3.35	100HCN	BS-10	
	C40BC-10SC650		6.50	6.00			

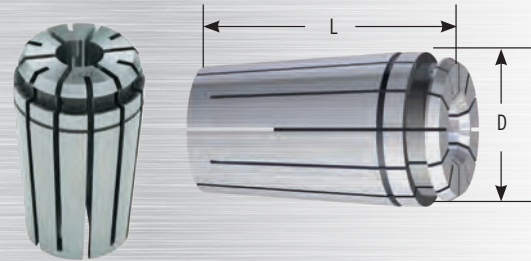
CAT 50 (0.310" - 1.000"/.8 MM - 25.4 MM)

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Back-Up Screw (Incl.)	Nut Torque
75 PG	C50BC-75SC300	2.10	3.00	3.00	75HCN	BS-18	60 ft./lbs.
	C50BC-75SC600		6.00				
100 PG	C50BC-10SC300	2.44	3.00	4.00	100HCN	BS-10	
	C50BC-10SC750		7.50	5.50			

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

Single-Angle Collets

STANDARD COLLET



Single-Angle Collet

75 PG INCH/METRIC

Part Number	Inch Range	Metric Range
75PG-0046	.0312 - .0469	1 mm
75PG-0062	.0469 - .0625	1.5 mm
75PG-0078	.0625 - .0781	2 mm
75PG-0093	.0781 - .0938	-
75PG-0109	.0938 - .1094	2.5 mm
75PG-0125	.1094 - .1250	3 mm
75PG-0140	.1250 - .1406	3.5 mm
75PG-0156	.1406 - .1562	-
75PG-0171	.1562 - .1719	4 mm
75PG-0187	.1719 - .1875	4.5 mm
75PG-0203	.1875 - .2031	5 mm
75PG-0218	.2031 - .2188	5.5 mm
75PG-0234	.2188 - .2344	-
75PG-0250	.2344 - .2500	6 mm
75PG-0265	.2500 - .2656	6.5 mm
75PG-0281	.2656 - .2812	7 mm
75PG-0296	.2812 - .2969	7.5 mm
75PG-0312	.2969 - .3125	-
75PG-0328	.3125 - .3281	8 mm
75PG-0343	.3281 - .3438	8.5 mm
75PG-0359	.3438 - .3594	9 mm
75PG-0375	.3594 - .3750	9.5 mm
75PG-0390	.3750 - .3906	-
75PG-0406	.3906 - .4062	10 mm
75PG-0421	.4062 - .4219	10.5 mm
75PG-0437	.4219 - .4375	11 mm
75PG-0453	.4375 - .4531	11.5 mm
75PG-0468	.4531 - .4688	-
75PG-0484	.4688 - .4844	12 mm
75PG-0500	.4844 - .5000	12.5 mm
75PG-0515	.5000 - .5156	13 mm
75PG-0531	.5156 - .5312	13.5 mm
75PG-0546	.5312 - .5469	-
75PG-0562	.5469 - .5625	14 mm
75PG-0578	.5625 - .5781	14.5 mm
75PG-0593	.5781 - .5938	15 mm
75PG-0609	.5938 - .6094	-
75PG-0625	.6094 - .6250	15.5 mm
75PG-0640	.6250 - .6406	16 mm
75PG-0656	.6406 - .6562	16.5 mm
75PG-0671	.6562 - .6719	17 mm
75PG-0687	.6719 - .6875	-
75PG-0703	.6875 - .7031	17.5 mm
75PG-0718	.7031 - .7188	18 mm
75PG-0734	.7188 - .7344	18.5 mm
75PG-0750	.7344 - .7500	19 mm

75 PG INCH/METRIC SET

PART NUMBER	75PG-S016
NUMBER OF PIECES	48 PIECES
RANGE	3/64 - 3/4 x1/64
PART NUMBER	75PG-S017
NUMBER OF PIECES	17 PIECES
RANGE	1/4 - 3/4 x1/32

75 PG INCH/METRIC

PART NUMBER	75PG-S031
NUMBER OF PIECES	23 PIECES
RANGE	1/16 - 3/4 x1/32
PART NUMBER	75PG-S062
NUMBER OF PIECES	12 PIECES
RANGE	1/16 - 3/4 x1/16

100 PG INCH/METRIC

100PG-0046	.0312 - .0469	1 mm
100PG-0062	.0469 - .0625	1.5 mm
100PG-0078	.0625 - .0781	2 mm
100PG-0093	.0781 - .0938	-
100PG-0109	.0938 - .1094	2.5 mm
100PG-0125	.1094 - .1250	3 mm
100PG-0140	.1250 - .1406	3.5 mm
100PG-0156	.1406 - .1562	-
100PG-0171	.1562 - .1719	4 mm
100PG-0187	.1719 - .1875	4.5 mm
100PG-0203	.1875 - .2031	5 mm
100PG-0218	.2031 - .2188	5.5 mm
100PG-0234	.2188 - .2344	-
100PG-0250	.2344 - .2500	6 mm
100PG-0265	.2500 - .2656	6.5 mm
100PG-0281	.2656 - .2812	7 mm
100PG-0296	.2812 - .2969	7.5 mm
100PG-0312	.2969 - .3125	-
100PG-0328	.3125 - .3281	8 mm
100PG-0343	.3281 - .3438	8.5 mm
100PG-0359	.3438 - .3594	9 mm
100PG-0375	.3594 - .3750	9.5 mm
100PG-0390	.3750 - .3906	-
100PG-0406	.3906 - .4062	10 mm
100PG-0421	.4062 - .4219	10.5 mm
100PG-0437	.4219 - .4375	11 mm
100PG-0453	.4375 - .4531	11.5 mm
100PG-0468	.4531 - .4688	-
100PG-0484	.4688 - .4844	12 mm
100PG-0500	.4844 - .5000	12.5 mm
100PG-0515	.5000 - .5156	13 mm
100PG-0531	.5156 - .5312	13.5 mm
100PG-0546	.5312 - .5469	-
100PG-0562	.5469 - .5625	14 mm
100PG-0578	.5625 - .5781	14.5 mm
100PG-0593	.5781 - .5938	15 mm
100PG-0609	.5938 - .6094	-
100PG-0625	.6094 - .6250	15.5 mm
100PG-0640	.6250 - .6406	16 mm
100PG-0656	.6406 - .6562	16.5 mm
100PG-0671	.6562 - .6719	17 mm
100PG-0687	.6719 - .6875	-
100PG-0703	.6875 - .7031	17.5 mm
100PG-0718	.7031 - .7188	18 mm
100PG-0734	.7188 - .7344	18.5 mm
100PG-0750	.7344 - .7500	19 mm

100 PG INCH/METRIC

100PG-0765	.7500 - .7656	-
100PG-0781	.7656 - .7812	19.5 mm
100PG-0796	.7812 - .7969	20 mm
100PG-0812	.7969 - .8125	20.5 mm
100PG-0828	.8125 - .8281	21 mm
100PG-0843	.8281 - .8438	-
100PG-0859	.8438 - .8594	21.5 mm
100PG-0875	.8594 - .8750	22 mm
100PG-0890	.8750 - .8906	22.5 mm
100PG-0906	.8906 - .9062	23 mm
100PG-0921	.9062 - .9219	-
100PG-0937	.9219 - .9375	23.5 mm
100PG-0953	.9375 - .9531	24 mm
100PG-0968	.9531 - .9688	24.5 mm
100PG-0984	.9688 - .9844	25 mm
100PG-1000	.9844 - 1.0000	-
100PG-0968	.9531 - .9688	24.5 mm
100PG-0984	.9688 - .9844	25 mm
100PG-1000	.9844 - 1.0000	-
100PG-0859	.8438 - .8594	21.5 mm
100PG-0875	.8594 - .8750	22 mm
100PG-0890	.8750 - .8906	22.5 mm
100PG-0906	.8906 - .9062	23 mm
100PG-0921	.9062 - .9219	-
100PG-0937	.9219 - .9375	23.5 mm
100PG-0953	.9375 - .9531	24 mm
100PG-0968	.9531 - .9688	24.5 mm
100PG-0984	.9688 - .9844	25 mm
100PG-1000	.9844 - 1.0000	-
100PG-10MM	-	10 mm
100PG-12MM	-	12 mm
100PG-14MM	-	14 mm
100PG-16MM	-	16 mm
100PG-18MM	-	18 mm
100PG-20MM	-	20 mm

100 PG INCH/METRIC SET

PART NUMBER	100PG-S016
NUMBER OF PIECES	59 PIECES
RANGE	3/32 - 1 x1/64
PART NUMBER	100PG-S021
NUMBER OF PIECES	21 PIECES
RANGE	3/8 - 1 x1/32
PART NUMBER	100PG-S031
NUMBER OF PIECES	30 PIECES
RANGE	3/32 - 1 x1/32
PART NUMBER	100PG-S041
NUMBER OF PIECES	41 PIECES
RANGE	3/8 - 1 x1/64
PART NUMBER	100PG-S062
NUMBER OF PIECES	15 PIECES
RANGE	1/8 - 1 x1/16
PART NUMBER	100PG-S125
NUMBER OF PIECES	8 PIECES
RANGE	1/8 - 1 x1/8

Single-Angle Collets

Production Toolholding Solutions

STANDARD COLLET

150 PG INCH/METRIC

Part Number	Inch Range	Metric Range
150PG-0750	.7344 - .7500	19 mm
150PG-0765	.7500 - .7656	-
150PG-0781	.7656 - .7812	19.5 mm
150PG-0796	.7812 - .7969	20 mm
150PG-0812	.7969 - .8125	20.5 mm
150PG-0828	.8125 - .8281	21 mm
150PG-0843	.8281 - .8438	-
150PG-0859	.8438 - .8594	21.5 mm
150PG-0875	.8594 - .8750	22 mm
150PG-0890	.8750 - .8906	22.5 mm
150PG-0906	.8906 - .9062	23 mm
150PG-0921	.9062 - .9219	-
150PG-0937	.9219 - .9375	23.5 mm
150PG-0953	.9375 - .9531	24 mm
150PG-0968	.9531 - .9688	24.5 mm
150PG-0984	.9688 - .9844	25 mm
150PG-1000	.9844 - 1.0000	-
150PG-1015	1.0000 - 1.0156	25.5 mm
150PG-1031	1.0156 - 1.0312	26 mm
150PG-1046	1.0312 - 1.0469	26.5 mm
150PG-1062	1.0469 - 1.0625	27 mm

150 PG INCH/METRIC

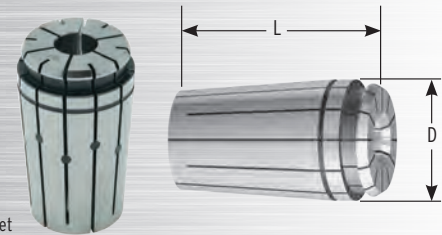
Part Number	Inch Range	Metric Range
150PG-1078	1.0625 - 1.0781	-
150PG-1093	1.0781 - 1.0938	27.5 mm
150PG-1109	1.0938 - 1.1094	28 mm
150PG-1125	1.1094 - 1.1250	28.5 mm
150PG-1140	1.1250 - 1.1406	29 mm
150PG-1156	1.1406 - 1.1562	-
150PG-1171	1.1562 - 1.1719	29.5 mm
150PG-1187	1.1719 - 1.1875	30 mm
150PG-1203	1.1875 - 1.2031	30.5 mm
150PG-1218	1.2031 - 1.2188	31 mm
150PG-1234	1.2188 - 1.2344	-
150PG-1250	1.2344 - 1.2500	31.5 mm
150PG-1265	1.2500 - 1.2656	32 mm
150PG-1265	1.2500 - 1.2656	32 mm
150PG-1281	1.2656 - 1.2812	32.5 mm
150PG-1296	1.2812 - 1.2969	33 mm
150PG-1312	1.2969 - 1.3125	-
150PG-1328	1.3125 - 1.3281	33.5 mm
150PG-1343	1.3281 - 1.3438	34 mm
150PG-1359	1.3438 - 1.3594	34.5 mm
150PG-1375	1.3594 - 1.3750	35 mm

150 PG INCH/METRIC

Part Number	Inch Range	Metric Range
150PG-1390	1.3750 - 1.3906	-
150PG-1406	1.3906 - 1.4062	35.5 mm
150PG-1421	1.4062 - 1.4219	36 mm
150PG-1437	1.4219 - 1.4375	36.5 mm
150PG-1453	1.4375 - 1.4531	37 mm
150PG-1468	1.4531 - 1.4688	-
150PG-1484	1.4688 - 1.4844	37.5 mm
150PG-1500	1.4844"-1.5000"	38 mm

150 PG INCH/METRIC SET

PART NUMBER	150PG-S016
NUMBER OF PIECES	65 PIECES
RANGE	1/2 - 1 1/2 x1/64
PART NUMBER	150PG-S025
NUMBER OF PIECES	25 PIECES
RANGE	3/4 - 1 x1/32
PART NUMBER	150PG-S031
NUMBER OF PIECES	33 PIECES
RANGE	3/4 - 1 x1/32



Single-Angle Sealed Collet

SEALED COLLET

100 PG INCH/METRIC

Part Number	Inch Range	Metric Range
100RPG-0187	0.187	-
100RPG-0218	0.218	-
100RPG-0234	0.234	-
100RPG-0250	0.25	-
100RPG-0265	0.265	-
100RPG-0281	0.281	-
100RPG-0296	0.296	-
100RPG-0312	0.312	-
100RPG-0328	0.328	-
100RPG-0343	0.343	-
100RPG-0359	0.359	-
100RPG-0375	0.375	-
100RPG-0390	0.39	-
100RPG-0406	0.406	-
100RPG-0421	0.421	-
100RPG-0437	0.437	-
100RPG-0453	0.453	-
100RPG-0468	0.468	-
100RPG-0484	0.484	-
100RPG-0500	0.5	-
100RPG-0515	0.515	-

100 RPG INCH/METRIC

Part Number	Inch Range	Metric Range
100RPG-0531	0.531	-
100RPG-0546	0.546	-
100RPG-0562	0.562	-
100RPG-0578	0.578	-
100RPG-0593	0.593	-
100RPG-0609	0.609	-
100RPG-0625	0.625	-
100RPG-0640	0.64	-
100RPG-0656	0.656	-
100RPG-0671	0.671	-
100RPG-0687	0.687	-
100RPG-0703	0.703	-
100RPG-0718	0.718	-
100RPG-0734	0.734	-
100RPG-0750	0.75	-
100RPG-0765	0.765	-
100RPG-0781	0.781	-
100RPG-0796	0.796	-
100RPG-0812	0.812	-
100RPG-0828	0.828	-
100RPG-0843	0.843	-

100 RPG INCH/METRIC

Part Number	Inch Range	Metric Range
100RPG-0859	0.859	-
100RPG-0875	0.875	-
100RPG-0890	0.89	-
100RPG-0906	0.906	-
100RPG-0921	0.921	-
100RPG-0937	0.937	-
100RPG-0953	0.953	-
100RPG-0968	0.968	-
100RPG-0984	0.984	-
100RPG-1000	1	-

100 RPG INCH/METRIC SET

PART NUMBER	100RPG-S027
NUMBER OF PIECES	27 PIECES
RANGE	3/16 - 1 x1/32

150 RPG INCH/METRIC

150RPG-1000	1	-
150RPG-1250	1.25	-
150RPG-1500	1.5	-

SINGLE-ANGLE COLLET SIZE

	75PG	100PG	150PG
LENGTH (L)	1.844	2.375	3.000
DIAMETER (D)	1.062	1.379	2.001

Single-Angle Collet Chuck Accessories

COOLANT SEAL

PG 100 INCH/METRIC

Part Number	Inch Range	Metric Range
CSPG100-0141	0.122-0.141	3.1-3.6 mm
CSPG100-0160	0.142-0.16	3.6-4.1 mm
CSPG100-0180	0.161-0.18	4.1-4.6 mm
CSPG100-0200	0.181-0.2	4.6-5.1 mm
CSPG100-0220	0.201-0.22	5.1-5.6 mm
CSPG100-0240	0.221-0.24	5.6-6.1 mm
CSPG100-0260	0.241-0.26	6.1-6.6 mm
CSPG100-0280	0.261-0.28	6.6-7.1 mm
CSPG100-0300	0.281-0.3	7.1-7.6 mm
CSPG100-0319	0.301-0.319	7.6-8.1 mm
CSPG100-0339	0.32-0.339	8.1-8.6 mm
CSPG100-0359	0.34-0.359	8.6-9.1 mm
CSPG100-0379	0.36-0.379	9.1-9.6 mm
CSPG100-0398	0.38-0.398	9.6-10.1 mm
CSPG100-0417	0.399-0.417	10.1-10.6 mm
CSPG100-0437	0.418-0.437	10.6-11.1 mm
CSPG100-0457	0.438-0.457	11.1-11.6 mm
CSPG100-0477	0.458-0.477	11.6-12.1 mm
CSPG100-0497	0.478-0.497	12.1-12.6 mm
CSPG100-0516	0.498-0.516	12.6-13.1 mm
CSPG100-0536	0.517-0.536	13.1-13.6 mm
CSPG100-0556	0.547-0.556	13.6-14.1 mm
CSPG100-0575	0.557-0.575	14.1-14.6 mm
CSPG100-0595	0.576-0.595	14.6-15.1 mm
CSPG100-0614	0.596-0.614	15.1-15.6 mm
CSPG100-0634	0.615-0.634	15.6-16.1 mm

PG 100 INCH/METRIC

Part Number	Inch Range	Metric Range
CSPG100-0654	0.635-0.654	16.1-16.6 mm
CSPG100-0673	0.655-0.673	16.6-17.1 mm
CSPG100-0693	0.674-0.693	17.1-17.6 mm
CSPG100-0713	0.694-0.713	17.6-18.1 mm
CSPG100-0732	0.714-0.732	18.1-18.6 mm
CSPG100-0752	0.733-0.752	18.6-19.1 mm
CSPG100-0772	0.753-0.772	19.1-19.6 mm
CSPG100-0792	0.773-0.792	19.6-20.1 mm
CSPG100-0811	0.793-0.811	20.1-20.6 mm
CSPG100-0831	0.812-0.831	20.6-21.1 mm
CSPG100-0851	0.832-0.851	21.1-21.6 mm
CSPG100-0870	0.852-0.87	21.6-22.1 mm
CSPG100-0890	0.871-0.89	22.1-22.6 mm
CSPG100-0910	0.891-0.91	22.6-23.1 mm
CSPG100-0929	0.911-0.929	23.1-23.6 mm
CSPG100-0949	0.93-0.949	23.6-24.1 mm
CSPG100-0969	0.95-0.969	24.1-24.6 mm
CSPG100-0988	0.97-0.988	24.6-25.1 mm
CSPG100-1008	0.989-1.008	25.1-25.6 mm
CSPG100-S046	0.122-1.008	3.1-25.6 mm

COLLET NUT THREAD SEAL REQUIRED

Part Number
CSPG100-0000

COLLET NUT

Size	Part Number	Style	Type	B
75 PG	75HCN	2	Hex/Spanner	2.10
100 PG	100HCN	2	Hex/Spanner	2.44
150 PG	15CN	1	Spanner	3.43

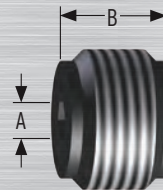


Style 1 Spanner

Style 2 Hex/Spanner

TYPE II BACK-UP SCREW

Type II Part Number	A	B	Thread (Left Hand)
BS-08	3/16	.56	15/16-16
BS-10	3/16	.56	1 1/8-16
BS-15	3/16	.75	1 5/8- 12
BS-18	3/16	.56	13/16-16



Type II Standard with Coolant Hole

STANDARD WRENCH

Nut Collet Size	Part Number	Type	Size (Inches)
75PG	75HCNW	Open End	1 7/8
100PG	100HCNW	Open End	2 1/4
100PG/150PG	100CNW	Pin Spanner	-
100PG/150PG	TWN-100CNW	PMC Adjustable	-

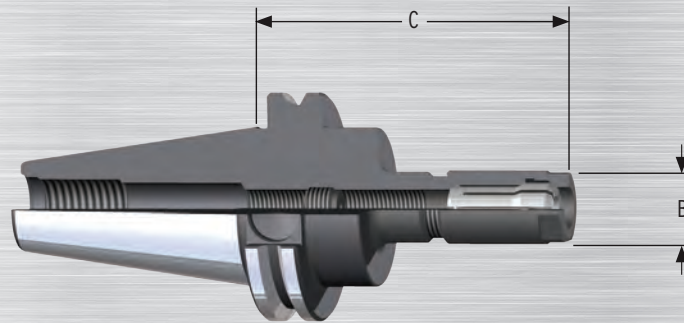


Open End

Adjustable Pin Spanner Wrench 100CNW shown here

Double-Angle Collet Chucks

DOUBLE-ANGLE COLLET CHUCKS



BT TAPER

BT 40 (0.310" - 0.750"/.8 MM - 19 MM)

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Back-Up Screw (Incl.)	Nut Torque
DA 300	B40-30DC3	0.62	3.00	2.75	CN30	029-909	25 ft./lbs.
DA 200	B40-20DC2	1.10	2.75	2.25	CN20	BS-20	30 ft./lbs.
DA 180	B40-18DC3	1.44	3.00	3.25	ECN75	BS-18	40 ft./lbs.

CAT TAPER

CAT 40 (0.310" - 0.750"/.8 MM - 19 MM)

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Back-Up Screw (Incl.)	Nut Torque	
DA 300	C40-30DC3	0.62	3.38	3.00	CN30	029-909	25 ft./lbs.	
	C40-30DC5		5.15					
	C40-20DC2	1.10	2.73					2.50
DA 200	C40-20DC3	0.81	3.00	3.00	CN20	BS-20	30 ft./lbs.	
	C40-20DC5		5.00					5.00
	C40-18DC2		2.95					3.00
DA 180	C40-18DC3	1.44	3.38	3.56	ECN75	BS-18	40 ft./lbs.	
	C40-18DC5		5.15					4.88

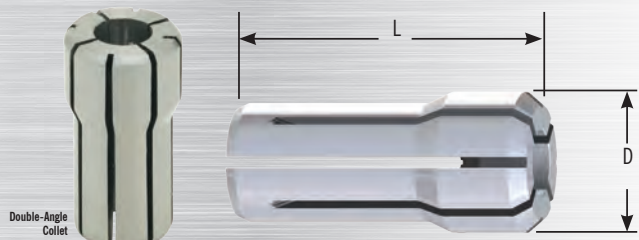
CAT 50 (0.310" - 0.750"/.8 MM - 19 MM)

Size	Part Number	B (Dia.)	C	Socket Depth	Collet Nut (Incl.)	Back-Up Screw (Incl.)	Nut Torque
DA 180	C50-18DC3	1.44	3.38	3.30	ECN75	BS-18	40 ft./lbs.
	C50-18DC6		6.15	6.00			
	C50-18DC8		8.15	5.86			

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

Double-Angle Collets

STANDARD COLLET



DA 300 INCH/METRIC

Part Number	Inch Range	Metric Range
DA300-0046	.0312 -.0469	1 mm
DA300-0062	.0469 -.0625	1.5 mm
DA300-0078	.0625 -.0781	2 mm
DA300-0093	.0781 -.0938	-
DA300-0109	.0938-.1094	2.5 mm
DA300-0125	.1094 -.1250	3 mm
DA300-0140	.1250 -.1406	3.5 mm
DA300-0156	.1406 -.1562	-
DA300-0171	.1562 -.1719	4 mm
DA300-0187	.1719 -.1875	4.5 mm
DA300-0203	.1875 -.2031	5 mm
DA300-0218	.2031 -.2188	5.5 mm
DA300-0234	.2188 -.2344	-
DA300-0250	.2344 -.2500	6 mm

DA 300 INCH/METRIC SET

PART NUMBER	DA300-S005
NUMBER OF PIECES	5 PIECES
RANGE	1/8 - 1/4 x1/32
PART NUMBER	DA300-S008
NUMBER OF PIECES	8 PIECES
RANGE	-
PART NUMBER	DA300-S009
NUMBER OF PIECES	9 PIECES
RANGE	1/8 - 1/4 x1/64
PART NUMBER	DA300-S016
NUMBER OF PIECES	14 PIECES
RANGE	3/64 - 1/14 x1/64
PART NUMBER	DA300-S031
NUMBER OF PIECES	7 PIECES
RANGE	1/16 - 1/4 x1/32

DA 200 INCH/METRIC

Part Number	Inch Range	Metric Range
DA200-0046	.0312 -.0469	1 mm
DA200-0062	.0469 -.0625	1.5 mm
DA200-0078	.0625 -.0781	2 mm
DA200-0093	.0781 -.0938	-
DA200-0109	.0938 -.1094	2.5 mm
DA200-0125	.1094 -.1250	3 mm
DA200-0140	.1250 -.1406	3.5 mm
DA200-0156	.1406 -.1562	-
DA200-0171	.1562 -.1719	4 mm
DA200-0187	.1719 -.1875	4.5 mm
DA200-0203	.1875 -.2031	5 mm
DA200-0218	.2031 -.2188	5.5 mm
DA200-0234	.2188 -.2344	-
DA200-0250	.2344 -.2500	6 mm
DA200-0265	.2500 -.2656	6.5 mm
DA200-0281	.2656 -.2812	7 mm
DA200-0296	.2812 -.2969	7.5 mm
DA200-0312	.2969 -.3125	-
DA200-0328	.3125 -.3281	8 mm
DA200-0343	.3281 -.3438	8.5 mm

DA 200 INCH/METRIC

Part Number	Inch Range	Metric Range
DA200-0359	.3438 -.3594	9 mm
DA200-0375	.3594 -.3750	9.5 mm
DA200-0390	.3750 -.3906	-
DA200-1MM	-	1 mm
DA200-1.5MM	-	1.5 mm
DA200-2MM	-	2 mm
DA200-2.5MM	-	2.5 mm
DA200-3MM	-	3 mm
DA200-3.5MM	-	3.5 mm
DA200-4MM	-	4 mm
DA200-4.5MM	-	4.5 mm
DA200-5MM	-	5 mm
DA200-5.5MM	-	5.5 mm
DA200-6MM	-	6 mm
DA200-6.5MM	-	6.5 mm
DA200-7MM	-	7 mm
DA200-7.5MM	-	7.5 mm
DA200-8MM	-	8 mm
DA200-8.5MM	-	8.5 mm
DA200-9MM	-	9 mm
DA200-9.5MM	-	9.5 mm
DA200-10MM	-	10 mm

DA 200 INCH/METRIC SET

PART NUMBER	DA200-S009
NUMBER OF PIECES	9 PIECES
RANGE	1/8 - 3/8 x1/32
PART NUMBER	DA200-S016
NUMBER OF PIECES	21 PIECES
RANGE	3/64 - 3/8 x1/64
PART NUMBER	DA200-S031
NUMBER OF PIECES	11 PIECES
RANGE	1/16 - 3/8 x1/32

DA 100 INCH/METRIC

Part Number	Inch Range	Metric Range
DA100-0046	.0312 -.0469	1 mm
DA100-0062	.0469 -.0625	1.5 mm
DA100-0078	.0625 -.0781	2 mm
DA100-0093	.0781 -.0938	-
DA100-0109	.0938 -.1094	2.5 mm
DA100-0125	.1094 -.1250	3 mm
DA100-0140	.1250 -.1406	3.5 mm
DA100-0156	.1406 -.1562	-
DA100-0171	.1562 -.1719	4 mm
DA100-0187	.1719 -.1875	4.5 mm
DA100-0203	.1875 -.2031	5 mm
DA100-0218	.2031 -.2188	5.5 mm
DA100-0234	.2188 -.2344	-
DA100-0250	.2344 -.2500	6 mm
DA100-0265	.2500 -.2656	6.5 mm
DA100-0281	.2656 -.2812	7 mm
DA100-0296	.2812 -.2969	7.5 mm
DA100-0312	.2969 -.3125	8 mm
DA100-0328	.3125 -.3281	8 mm

DA 100 INCH/METRIC

Part Number	Inch Range	Metric Range
DA100-0343	.3281 -.3438	8.5 mm
DA100-0359	.3438 -.3594	9 mm
DA100-0375	.3594 -.3750	9.5 mm
DA100-0390	.3750 -.3906	-
DA100-0406	.3906 -.4062	10 mm
DA100-0421	.4062 -.4219	10.5 mm
DA100-0437	.4219 -.4375	11 MM
DA100-0453	.4375 -.4531	11.5 mm
DA100-0468	.4531 -.4688	-
DA100-0484	.4688 -.4844	12 mm
DA100-0500	.4844 -.5000	12.5 mm
DA100-0515	.5000 -.5156	13 mm
DA100-0531	.5156 -.5312	13.5 mm
DA100-0546	.5312 -.5469	-
DA100-0562	.5469 -.5625	14 mm
DA100-2.5MM	-	2.5 mm
DA100-3MM	-	3 mm
DA100-3.5MM	-	3.5 mm
DA100-4MM	-	4 mm
DA100-4.5MM	-	4.5 mm
DA100-5MM	-	5 mm
DA100-5.5MM	-	5.5 mm
DA100-6MM	-	6 mm
DA100-6.5MM	-	6.5 mm
DA100-7MM	-	7 mm
DA100-7.5MM	-	7.5 mm
DA100-8MM	-	8 mm
DA100-8.5MM	-	8.5 mm
DA100-9MM	-	9 mm
DA100-9.5MM	-	9.5 mm
DA100-10MM	-	10 mm
DA100-10.5MM	-	10.5 mm
DA100-11MM	-	11 mm
DA100-11.5MM	-	11.5 mm
DA100-12MM	-	12 mm
DA100-12.5MM	-	12.5 mm
DA100-13MM	-	13 mm
DA100-13.5MM	-	13.5 mm
DA100-14MM	-	14 mm

DA 100 INCH/METRIC SET

PART NUMBER	DA100-S011
NUMBER OF PIECES	11 PIECES
RANGE	1/4 - 9/16 x1/32
PART NUMBER	DA100-S016
NUMBER OF PIECES	29 PIECES
RANGE	1/8 - 9/16 x1/64
PART NUMBER	DA100-S021
NUMBER OF PIECES	21 PIECES
RANGE	1/4 - 9/16 x1/64
PART NUMBER	DA100-S031
NUMBER OF PIECES	15 PIECES
RANGE	1/8 - 9/16 x1/32
PART NUMBER	DA100-S033
NUMBER OF PIECES	33 PIECES
RANGE	1/16 - 9/16 x1/64

Double-Angle Collets

STANDARD COLLET

DA 180 INCH/METRIC

Part Number	Inch Range	Metric Range
DA180-0046	.0312 - .0469	1 mm
DA180-0062	.0469 - .0625	1.5 mm
DA180-0078	.0625 - .0781	2 MM
DA180-0093	.0781 - .0938	-
DA180-0109	.0938 - .1094	2.5 mm
DA180-0125	.1094 - .1250	3 MM
DA180-0140	.1250 - .1406	3.5 mm
DA180-0156	.1406 - .1562	-
DA180-0171	.1562 - .1719	4 MM
DA180-0187	.1719 - .1875	4.5 mm
DA180-0203	.1875 - .2031	5 MM
DA180-0218	.2031 - .2188	5.5 mm
DA180-0234	.2188 - .2344	-
DA180-0250	.2344 - .2500	6 MM
DA180-0265	.2500 - .2656	6.5 mm
DA180-0281	.2656 - .2812	7 MM
DA180-0296	.2812 - .2969	7.5 mm
DA180-0312	.2969 - .3125	-
DA180-0328	.3125 - .3281	8 mm
DA180-0343	.3281 - .3438	8.5 mm
DA180-0359	.3438 - .3594	9 mm
DA180-0375	.3594 - .3750	9.5 mm
DA180-0390	.3750 - .3906	-
DA180-0406	.3906 - .4062"	10 mm
DA180-0421	.4062 - .4219	10.5 mm
DA180-0437	.4219 - .4375	11 mm
DA180-0453	.4375 - .4531	11.5 mm
DA180-0468	.4531 - .4688	-
DA180-0484	.4688 - .4844	12 mm
DA180-0500	.4844 - .5000	12.5 mm
DA180-0515	.5000 - .5156	13 mm
DA180-0531	.5156 - .5312	13.5 mm

DA 180 INCH/METRIC

Part Number	Inch Range	Metric Range
DA180-0546	.5312 - .5469	-
DA180-0562	.5469 - .5625	14 mm
DA180-0578	.5625 - .5781	14.5 mm
DA180-0593	.5781 - .5938	15 mm
DA180-0609	.5938 - .6094	-
DA180-0625	.6094 - .6250	15.5 mm
DA180-0640	.6250 - .6406	16 mm
DA180-0656	.6406 - .6562	16.5 mm
DA180-0671	.6562 - .6719	17 mm
DA180-0687	.6719 - .6875	-
DA180-0703	.6875 - .7031	17.5 mm
DA180-0718	.7031 - .7188	18 mm
DA180-0734	.7188 - .7344	18.5 mm
DA180-0750	.7344 - .7500	19 mm
DA180-1MM	-	1 mm
DA180-1.5MM	-	1.5 mm
DA180-2MM	-	2 mm
DA180-2.5MM	-	2.5 mm
DA180-3MM	-	3 mm
DA180-3.5MM	-	3.5 mm
DA180-4MM	-	4 mm
DA180-4.5MM	-	4.5 mm
DA180-5MM	-	5 mm
DA180-5.5MM	-	5.5 mm
DA180-6MM	-	6 mm
DA180-6.5MM	-	6.5 mm
DA180-7MM	-	7 mm
DA180-7.5MM	-	7.5 mm
DA180-8MM	-	8 mm
DA180-8.5MM	-	8.5 mm
DA180-9MM	-	9 mm
DA180-9.5MM	-	9.5 mm

DA 180 INCH/METRIC

Part Number	Inch Range	Metric Range
DA180-10MM	-	10 mm
DA180-10.5MM	-	10.5 mm
DA180-11MM	-	11 mm
DA180-11.5MM	-	11.5 mm
DA180-12MM	-	12 mm
DA180-12.5MM	-	12.5 mm
DA180-13MM	-	13 mm
DA180-13.5MM	-	13.5 mm
DA180-14MM	-	14 mm
DA180-14.5MM	-	14.5 mm
DA180-15MM	-	15 mm
DA180-15.5MM	-	15.5 mm
DA180-16MM	-	16 mm
DA180-16.5MM	-	16.5 mm
DA180-17MM	-	17 mm
DA180-17.5MM	-	17.5 mm
DA180-18MM	-	18 mm
DA180-18.5MM	-	18.5 mm
DA180-19MM	-	19 mm
DA180-19.5MM	-	19.5 mm
DA180-20MM	-	20 mm

DA 180 INCH/METRIC SET

PART NUMBER	DA180-S016
NUMBER OF PIECES	33 PIECES
RANGE	1/4 - 3/4 x1/64
PART NUMBER	DA180-S021
NUMBER OF PIECES	21 PIECES
RANGE	1/8 - 3/4 x1/32
PART NUMBER	DA180-S031
NUMBER OF PIECES	17 PIECES
RANGE	1/4 - 3/4 x1/32
PART NUMBER	DA180-S045
NUMBER OF PIECES	45 PIECES
RANGE	1/16 - 3/4 x1/64
PART NUMBER	DA180-S062
NUMBER OF PIECES	12 PIECES
RANGE	1/16 - 3/4 x1/16

DOUBLE-ANGLE COLLET SIZE

	DA300	DA200	DA180	DA100
LENGTH (L)	1.000	1.187	1.639	1.437
DIAMETER (D)	0.375	0.539	1.025	0.769

Double-Angle Collet Extensions

Double-Angle Extension



DA 300 COLLET SERIES .031" TO .250" (.8 MM TO 6.4 MM)

Size	Part Number	Range	A (Dia.)	B (Dia.)	C	Compression Nut (Incl.)	Stop Screw (Incl.)	Nut Tightening Torque	Wrench (Opt.)
DA 300	EXT500	0.31" - .250 (.8 - 6.4 mm)	.500	.56	1.322	ECN50	029-909	20 ft./lbs.	ECN50W

DA 200 COLLET SERIES .031" TO .391" (.75 MM TO 9.9 MM)

Size	Part Number	Range	A (Dia.)	B (Dia.)	C	Compression Nut (Incl.)	Stop Screw (Incl.)	Nut Tightening Torque	Wrench (Opt.)
DA 200	EXT750	0.31" - .391" (.75 - 9.9 mm)	.750	.81	1.686	ECN75	BS-20	30 ft./lbs.	ECN75W

DA 100 COLLET SERIES .031" TO .562" (.8 MM TO 14.3 MM)

Size	Part Number	Range	A (Dia.)	B (Dia.)	C	Compression Nut (Incl.)	Stop Screw (Incl.)	Nut Tightening Torque	Wrench (Opt.)
DA 100	EXT100	0.31" - .562" (.8 - 14.3 mm)	1.000	1.06	1.829	ECN10	029-911	35 ft./lbs.	ECN10W

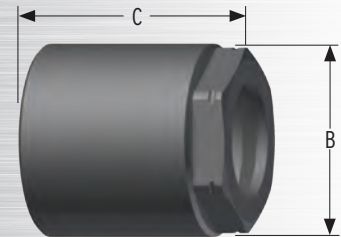
DA 180 COLLET SERIES .031" TO .750" (.8 MM TO 19 MM)

Size	Part Number	Range	A (Dia.)	B (Dia.)	C	Compression Nut (Incl.)	Stop Screw (Incl.)	Nut Tightening Torque	Wrench (Opt.)
DA 180	EXT125	0.31" - .750" (.8 - 19 mm)	1.250	1.44	1.813	ECN12	BS-18	40 ft./lbs.	ECN12W

Double-Angle Collet Accessories

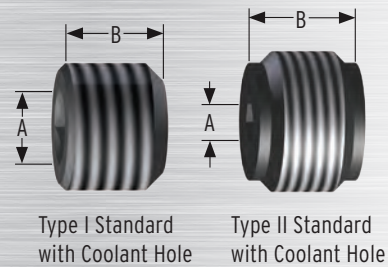
COLLET NUTS

Size	Part Number	B	C	Hex	Thread Size	Wrench
DA 300	CN30	0.6	1.10	1/2"	1/2"-28"	300CNW
	ECN50	0.56	1.10	1/2"	7/16"-32"	ECN50W
DA 200	CN20	1.10	0.88	1"	3/4"-16"	ECN20W
	ECN75	0.81	1.38	3/4"	11/16"-20"	ECN75W
DA 100	ECN10	1.06	1.50	15/16"	15/16"-20"	ECN10W
DA 180	ECN12	1.44	1.60	1 1/4"	1 1/4"-16"	ECN12W



TYPE I & II BACK-UP SCREW

Type I Part Number	Type II Part Number	A	B	Thread Left Hand
029-028	-	5/32	1/4	15/16-24
029-904	-	3/16	9/16	6/16-18
029-909	-	5/32	1/4	15/16-24
029-910	-	5/16	9/16	11/16-16
029-911	-	3/16	9/16	13/16-16
-	BS-18	3/16	9/16	13/16-16
-	BS-20	7/32	3/8	7/16-20



STANDARD WRENCH

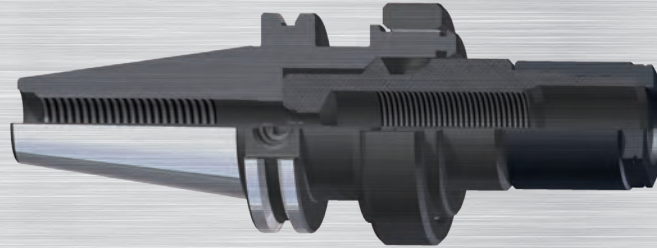
Part Number	Collet Series	Style
ECN50W	DA 300	Hex
300CNW	DA 300	Hex
ECN75W	DA 200	Hex
ECN20W	DA 200	Hex
ECN12W	DA 180	Hex
ECN10W	DA 100	Hex



Open End Wrench ECN20W shown here

Numerfloat Floating Reamer Holders

NUMERFLOAT FLOATING REAMER HOLDERS



BT TAPER WITH THROUGH COOLANT

BT 40 (0.310" - 1.000"/.8 MM - 25.4 MM)

Size	Part Number	B (Dia.)	C	Collet Nut (Incl.)	Back-Up Screw (Incl.)	Nut Torque
100 PG	B40-10FH5C	2.44	5.25	100HCN	BS-18	60 ft./lbs.

CAT TAPER WITH THROUGH COOLANT

CAT 40 (0.310" -0.750"/.8 MM - 19 MM)

Size	Part Number	B (Dia.)	C	Collet Nut (Incl.)	Back-Up Screw (Incl.)	Nut Torque
100 PG	C40-10FH5C	2.44	5.25	100HCN	BS-18	60 ft./lbs.
DA 180	C40-75FH5C	1.44	5.06	ECN75	BS-18	40 ft./lbs.

CAT 50 (0.310" -0.750"/.8 MM - 19 MM)

Size	Part Number	B (Dia.)	C	Collet Nut (Incl.)	Back-Up Screw (Incl.)	Nut Torque
100 PG	C50-10FH5C	2.44	5.25	100HCN	BS-18	60 ft./lbs.
150 PG	C50-15FH6C	3.43	6.50	15CN	BS-18	70 ft./lbs.
DA 180	C50-75FH5C	1.44	5.06	ECN75	BS-18	40 ft./lbs.

STRAIGHT SHANK TAPER WITH THROUGH COOLANT

CAT 40 (0.310" -0.750"/.8 MM - 19 MM)

Size	Part Number	B (Dia.)	C	Collet Nut (Incl.)	Back-Up Screw (Incl.)	Nut Torque
100 PG	S10-10FH5C	2.44	5.25"	100HCN	BS-18	60 ft./lbs.
DA 180	S10-15FH6C	1.44	-	15CN	BS-18	40 ft./lbs.
	S10-75FH5C		5.06"	ECN75	BS-18	

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.



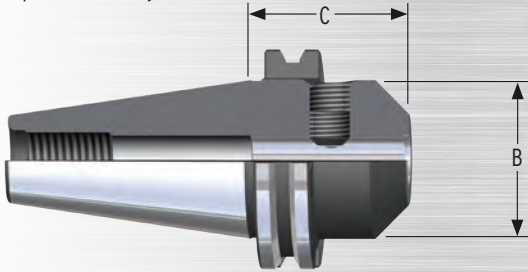
END MILL HOLDERS:

- First level quality and service
- Available in a variety of coolant entry and delivery configurations
 - Available with Simulfit (dual contact) tapers
- Toolholding Accessories
 - CAT, BT and HSK

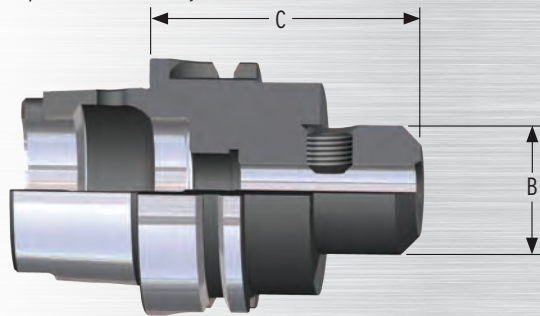
End Mill Holders

END MILL HOLDERS

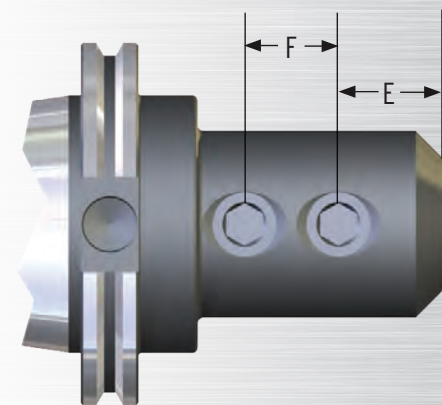
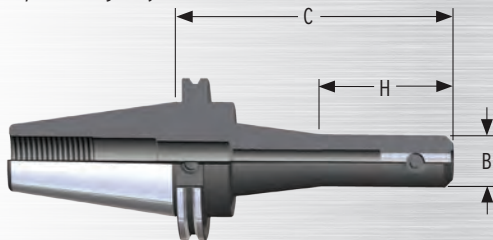
Style 1-Short Projection



Style 2-Extended Projection



Style 3-Long Projection



For Heavy Machining Using Tools with Weldon Flats

- The positive drive of the screw is unmatched for force to prevent slippage and pull out in heavy roughing applications.

Technical Specifications

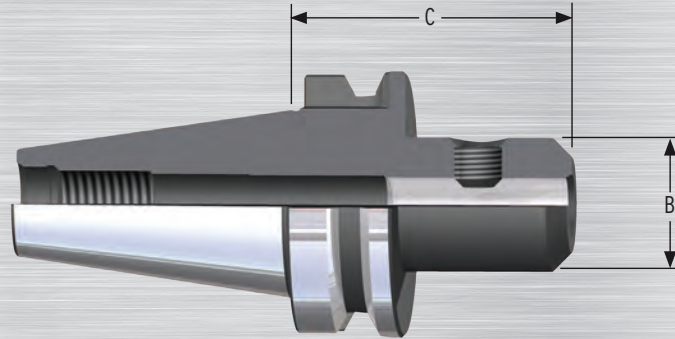
- Side locking design
- End Mill Socket T.I.R. $\pm .0002''$.
- Through-spindle coolant capability.

Coolant Options

- Coolant through holders require no special backup screws or seals. The interference fit between the ID of the toolholder and cutting tool shank forms the seal, preventing the coolant from flowing anywhere else except through the cutting tool. Coolant grooves and coolant porting also available.

1/8"	.38"	-
3/16"	.50"	-
1/4" (6 mm)	.38"	-
5/16" (8 mm)	.60"	-
3/8" (10 mm)	.75"	-
7/16"	.75"	-
1/2"/12 mm	.88"	-
9/16"/14 mm	.88"	-
5/8"/16 mm	.94"	-
3/4"/18,20 mm	1.00"	-
7/8"	1.00"	-
1"/25 mm	1.12"	1.00"
1 1/4"/32 mm	1.12"	1.00"
1 1/2"/40 mm	1.12"	1.00"
2"	1.41"	1.50"
2 1/2"	1.50"	1.56"

END MILL HOLDERS



BT TAPER

BT 30

Size	Part Number	Style	B (Dia.)	C	Socket Depth	E	F	H	Set Screw (Incl.)	Tightening Torque
1/8"	B30-01EM238	2	0.75	2.38	3.31	0.38	-	-	029-014	3 ft./lbs.
3/16"	B30-18EM238	2	0.75			0.50	-	-	029-018	4 ft./lbs.
1/4"	B30-25EM238	2	0.81			0.38	-	-	029-023	7 ft./lbs.
5/16"	B30-31EM238	2	1.00			0.60	-	-	029-917	9 ft./lbs.
3/8"	B30-37EM238	2	1.38			0.75	-	-	029-918	12 ft./lbs.
1/2"	B30-50EM238	2	1.38	2.50	2.00	0.88	-	-	029-917	17 ft./lbs.
5/8"	B30-62EM250	2	1.44		2.24	0.94	-	-	029-918	31 ft./lbs.
3/4"	B30-75EM250	2	2.00		2.25	1.00	-	-	029-925	45 ft./lbs.
1"	B30-10EM275	2	2.38	2.75	2.50	1.12	1.00	-	029-926	69 ft./lbs.

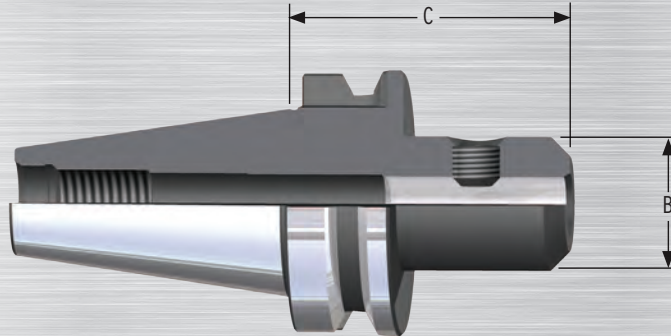
BT 40

Size	Part Number	Style	B (Dia.)	C	Socket Depth	E	F	H	Set Screw (Incl.)	Tightening Torque
1/8"	B40-01EM2	2	0.69	2.25	3.00	0.38	-	-	029-014	3 ft./lbs.
3/16"	B40-18EM2	2				0.50	-	-	029-018	4 ft./lbs.
1/4"	B40-25EM2	2	0.88			0.38	-	-	029-023	7 ft./lbs.
5/16"	B40-31EM2	2	1.00			0.60	-	-	029-917	9 ft./lbs.
3/8"	B40-37EM2	2				0.75	-	-	029-918	12 ft./lbs.
	B40-37EM4	2		4.00	4.00	0.75	-	-	029-902	14 ft./lbs.
7/16"	B40-43EM2	2	1.25	2.25	3.00	0.75	-	-	029-917	17 ft./lbs.
	B40-50EM1	2	1.75	1.75	2.75	0.88	-	-	029-917	19 ft./lbs.
1/2"	B40-50EM2	2	1.25	2.25	3.00	0.88	-	-	029-918	31 ft./lbs.
	B40-50EM4	2		4.00	4.50	0.88	-	-	029-918	31 ft./lbs.
9/16"	B40-56EM2	2		2.25	3.50	0.88	-	-	029-918	31 ft./lbs.
	B40-62EM1	2	1.50	1.75	2.75	0.94	-	-	029-918	31 ft./lbs.
5/8"	B40-62EM2	2		2.25	3.50	0.94	-	-	029-918	31 ft./lbs.
	B40-62EM6	2		6.00		0.94	-	-	029-925	45 ft./lbs.
	B40-75EM1	2	1.75	1.75	2.75	1.00	-	-	029-925	45 ft./lbs.
3/4"	B40-75EM3	2		3.38	2.38	1.00	-	-	029-925	45 ft./lbs.
	B40-75EM6	2		6.00	3.88	1.00	-	-	029-925	45 ft./lbs.
7/8"	B40-87EM3	2	1.88	3.75	4.18	1.00	0.81	-	029-925	48 ft./lbs.

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. See page 78 for specifications.

End Mill Holders

END MILL HOLDERS



BT TAPER

BT 40

Size	Part Number	Style	B (Dia.)	C	Socket Depth	E	F	H	Set Screw (Incl.)	Tightening Torque
1"	B40-10EM1	2	2.00	1.75	2.38	1.12	1.00	-	029-926	69 ft./lbs.
	B40-10EM4	2		4.00	4.44			-		
	B40-10EM6	2		6.00	4.50			-		
1 1/4"	B40-12EM2	2	2.50	2.00	2.38			-	029-922	
	B40-12EM4	2		4.00						
1 1/2"	B40-15EM4	2	2.62					-		

BT TAPER WITH SIMULFIT® DUAL CONTACT TAPER

BT 30

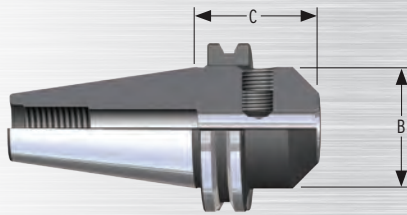
Size	Part Number	Style	B (Dia.)	C	Socket Depth	E	F	H	Set Screw (Incl.)	Tightening Torque	
1/4"	B30F-25EM238	2	0.81	2.38	3.31	0.38	-	-	029-018	7 ft./lbs.	
3/8"	B30F-37EM238	2	1.38			0.75	-	-	029-023	12 ft./lbs.	
1/2"	B30F-50EM238	2				2.00	0.88	-	-	029-917	17 ft./lbs.
5/8"	B30F-62EM250	2	1.44	2.50	2.24	0.94	-	-	029-918	31 ft./lbs.	
3/4"	B30F-75EM250	2	2.00			2.25	1.00	-	-	029-925	45 ft./lbs.
1"	B30F-10EM275	2	2.38			2.75	2.50	1.12	1.00	-	029-926

BT 40

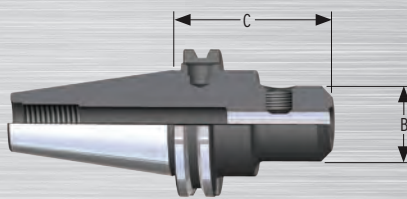
Size	Part Number	Style	B (Dia.)	C	Socket Depth	E	F	H	Set Screw (Incl.)	Tightening Torque
1/2"	B40F-50EM2	2	1.25	2.25	3.00	0.88	-	-	029-917	17 ft./lbs.
5/8"	B40F-62EM2	2	1.50		3.50	0.94	-	-	029-918	31 ft./lbs.
3/4"	B40F-75EM3	2	1.75	3.38	2.38	1.00	-	-	029-925	45 ft./lbs.
1"	B40F-10EM4	2	2.00	4.00	4.44	1.12	1.00	-	029-926	69 ft./lbs.
1 1/4"	B40F-12EM4	2	2.50		2.38			-	-	

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. See page 78 for specifications.

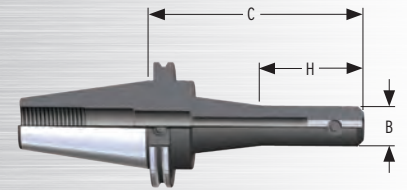
END MILL HOLDERS



Style 1-Short Projection



Style 2-Extended Projection



Style 3-Long Projection

CAT TAPER

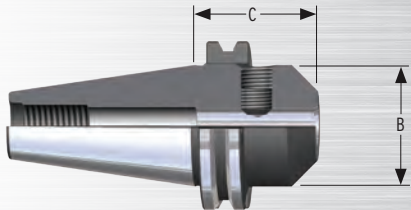
CAT 40

Size	Part Number	Style	B (Dia.)	C	Socket Depth	E	F	H	Set Screw (Incl.)	Tightening Torque
1/8"	C40-01EM1	1	0.69	1.75	3.00	0.38	-	-	029-014	3 ft./lbs.
	C40-01EM2	2		2.50	3.80		-	-		
	C40-01EM3	2	1.00	3.00	3.00		-	-		
	C40-01EM6	3		6.00	3.80		-	2.12		
3/16"	C40-18EM1	1	0.69	1.75	3.00	0.50	-	-	029-018	4 ft./lbs.
	C40-18EM2	2		2.50	3.80		-	-		
	C40-18EM3	2	1.00	3.00	3.00		-	-		
	C40-18EM6	3		6.00	3.80		-	2.50		
1/4"	C40-25EM1	1	.088	1.75	3.00	0.38	-	-	029-018	7 ft./lbs.
	C40-25EM2	2		2.50	3.80		-	-		
	C40-25EM3	2		3.00	3.00		-	-		
	C40-25EM6	3		6.00	3.80		-	2.50		
5/16"	C40-31EM1	1	1.00	1.75	3.00	0.60	-	-	029-023	9 ft./lbs.
	C40-31EM2	2		2.50	3.80		-	-		
	C40-31EM6	3		6.00	3.80		-	3.00		
3/8"	C40-37EM1	1	1.00	1.75	3.00	0.75	-	-	029-023	12 ft./lbs.
	C40-37EM2	2		2.50	3.80		-	-		
	C40-37EM4	3		4.50	3.80		-	1.00		
	C40-37EM6	3		6.00	3.80		-	2.50		
7/16"	C40-43EM1	1	1.25	1.75	3.00	0.88	-	-	029-902	14 ft./lbs.
	C40-43EM2	2		2.62	3.80		-	-		
1/2"	C40-50EM1	1	1.75	1.75	3.00	0.88	-	-	029-917	17 ft./lbs.
	C40-50EM2	2	1.25	2.62	3.80		-	-		

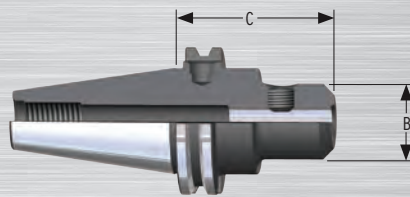
Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. See page 78 for specifications.

End Mill Holders

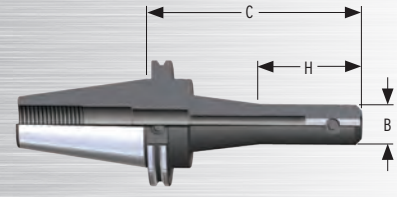
END MILL HOLDERS



Style 1-Short Projection



Style 2-Extended Projection



Style 3-Long Projection

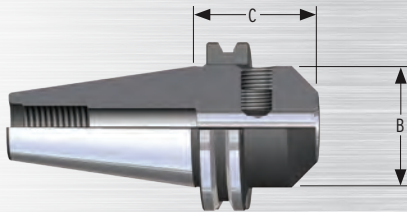
CAT TAPER

CAT 40

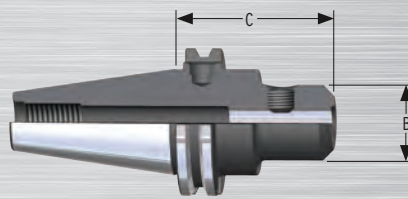
Size	Part Number	Style	B (Dia.)	C	Socket Depth	E	F	H	Set Screw (Incl.)	Tightening Torque	
1/2"	C40-50EM4	2	1.25	4.62	3.80	0.88	-	-	029-917	17 ft./lbs.	
	C40-50EM6	3		6.00	3.12		-	3.00			
9/16"	C40-56EM1	1	1.75	1.75	2.18	0.94	-	-	029-918	19 ft./lbs.	
	C40-56EM2	2	1.25	2.62	2.05		-	-			
5/8"	C40-62EM1	1	1.75	1.75	2.24	1.00	-	-	029-925	31 ft./lbs.	
	C40-62EM2	2	1.50	2.75	3.62		-	-			
	C40-62EM3	2		3.00	3.21		-	-			
C40-62EM6	2	6.00		3.31	-	-					
3/4"	C40-75EM1	1	1.75	1.75	2.37	1.12	-	-	029-926	45 ft./lbs.	
	C40-75EM300	2		3.00	4.25		-	-			
	C40-75EM3	2		3.50			3.94	-			-
	C40-75EM6	2		6.00			-	-			
7/8"	C40-87EM1	1	1.90	1.75		2.38	0.81	-	-	029-955	48 ft./lbs.
	C40-87EM350	2	1.88	3.50	4.25	-		-			
	C40-87EM3	2		3.75	4.25	-		-			
	C40-87EM6	2		6.00	4.25	-		-			
1"	C40-10EM1	1		2.00	1.75	2.38	1.12	1.00	-	029-926	69 ft./lbs.
	C40-10EM3	2	3.00	3.00	-	-					

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. See page 78 for specifications.

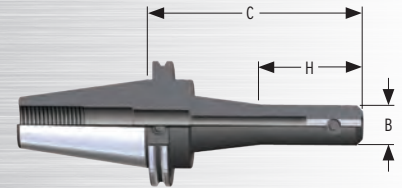
END MILL HOLDERS



Style 1-Short Projection



Style 2-Extended Projection



Style 3-Long Projection

CAT TAPER

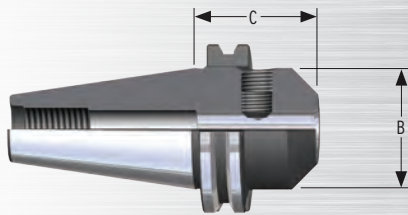
CAT 40

Size	Part Number	Style	B (Dia.)	C	Socket Depth	E	F	H	Set Screw (Incl.)	Tightening Torque	
1"	C40-10EM1	1	2.00	1.75	2.38			-	029-955		
	C40-10EM3	2		3.00	3.00			-			
	C40-10EM4	2		4.00	4.50			-			029-926
	C40-10EM6	2		6.00	4.50			-			
1 1/4"	C40-12EM2	1	2.25	2.00	2.38	1.12	1.00	-	029-922	69 ft./lbs.	
	C40-12EM4	2	4.00	3.75	-						
	C40-12EM425	2	2.50	4.25	3.75			-			
1 1/2"	C40-12EM6	2	6.00	3.75	-	-	-	-	-	-	
	C40-15EM4	2	2.62	4.00	2.38	-	-	-	-	-	
	C40-15EM462	2		4.62	2.38	-	-	-	-	-	
C40-15EM6	2	6.00		2.38	-	-	-	-	-		
6 mm	C40-M06EM2	2	0.88	2.50	3.50	0.38	-	-	029-018	7 ft./lbs.	
8 mm	C40-M08EM2	2	1.00	2.50	3.50	0.44	-	-		9 ft./lbs.	
10 mm	C40-M10EM2	2		2.50	3.50	0.75	-	-	029-902	12 ft./lbs.	
12 mm	C40-M12EM2	2	1.25	2.62	3.50	0.88	-	-	029-917	17 ft./lbs.	
14 mm	C40-M14EM2	2		2.62	2.00		-	-			
16 mm	C40-M16EM2	2	1.50	2.75	2.13	0.94	-	-	029-918	31 ft./lbs.	
18 mm	C40-M18EM2	2	1.75	2.75	2.25	1.00	-	-	029-925	43 ft./lbs.	
20 mm	C40-M20EM3	2		3.50	2.25		-	-			
25 mm	C40-M25EM4	2	2.00	4.00	3.00	1.12	100	-	029-926	69 ft./lbs.	
32 mm	C40-M32EM4	2	2.50	4.00	2.60			-			-

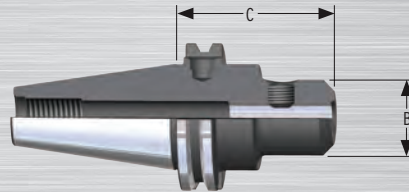
Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. See page 78 for specifications.

End Mill Holders

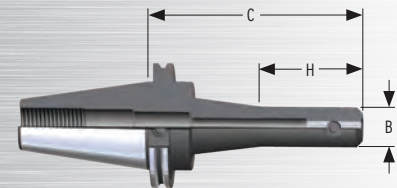
END MILL HOLDERS



Style 1-Short Projection



Style 2-Extended Projection



Style 3-Long Projection

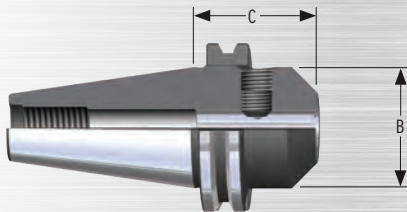
CAT TAPER

CAT 50

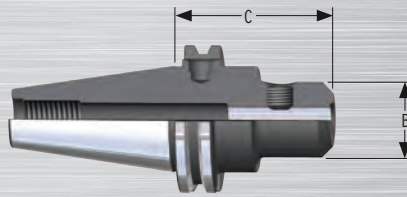
Size	Part Number	Style	B (Dia.)	C	Socket Depth	E	F	H	Set Screw (Incl.)	Tightening Torque	
1/8"	C50-01EM2	1	0.69	2.50	3.00	0.38	-	-	029-014	3 ft./lbs.	
3/16"	C50-18EM2	2		2.50	3.80	0.50	-	-	029-018	4 ft./lbs.	
1/4"	C50-02EM2	2	0.88	2.50	3.00	0.38	-	-		029-023	7 ft./lbs.
	C50-02EM450	2		4.50	3.00		-	-			
5/16"	C50-31EM2	2	1.00	2.50	3.00	0.60	-	-	029-023	9 ft./lbs.	
	C50-31EM450	2		4.50	3.00		-	-			
3/8"	C50-37EM2	2	1.00	2.50	3.00	0.75	-	-	029-023	12 ft./lbs.	
	C50-37EM4	2		4.50	3.00		-	-			
	C50-37EM6	3		6.50	3.00		-	-			
7/16"	C50-37EM8	3	1.25	8.00	3.00	-	3.00	029-902	14 ft./lbs.		
	C50-43EM2	2		2.62	3.00	-	-				
1/2"	C50-50EM2	2	1.25	2.62	3.00	0.88	-	-	029-917	17 ft./lbs.	
	C50-50EM4	2		4.62	5.00		-	-			
	C50-50EM6	3		6.62	5.00		-	3.13			
9/16"	C50-50EM8	3	1.50	8.00	5.00	0.94	-	-	029-918	19 ft./lbs.	
	C50-56EM2	2		2.62	3.00		-	-			
5/8"	C50-62EM3	2	1.50	3.75	3.50	0.94	-	-	029-918	31 ft./lbs.	
	C50-62EM5	2		5.75	3.50		-	-			
3/4"	C50-62EM7	3	1.75	7.75	3.50	1.00	-	4.25	029-925	45 ft./lbs.	
	C50-75EM1	1		2.75	1.62		4.00	-			-
	C50-75EM3	2		3.75	4.00		-	-			
3/4"	C50-75EM5	2	1.75	5.75	4.00	1.00	-	-	029-925	45 ft./lbs.	
	C50-75EM7	3		7.75	4.00		-	-			
7/8"	C50-87EM3	2	1.88	3.75	4.19	0.81	-	-	029-925	48 ft./lbs.	
	C50-87EM5	2		5.75	4.19		-	-			
	C50-87EM7	3		7.75	4.19		-	4.25			

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. See page 78 for specifications.

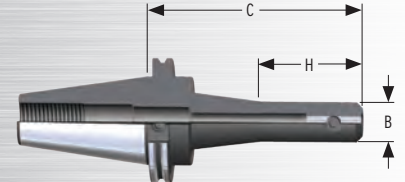
END MILL HOLDERS



Style 1-Short Projection



Style 2-Extended Projection



Style 3-Long Projection

CAT TAPER

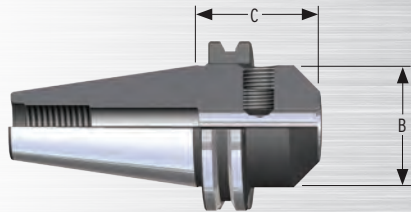
CAT 50

Size	Part Number	Style	B (Dia.)	C	Socket Depth	E	F	H	Set Screw (Incl.)	Tightening Torque
1"	C50-10EM1	1	2.75	1.62"	2.50	1.12	1.00	-	029-926	69 ft./lbs.
	C50-10EM4	2	2.00	4.00"	4.44			-		
	C50-10EM6	2		6.00"	4.44			-		
	C50-10EM8	3	8.00"	4.44	4.50					
1 1/4"	C50-12EM2	2	2.75	2.62	3.50	1.12	1.00	-	029-922	69 ft./lbs.
	C50-12EM4	2	2.50	4.00	3.35			-		
	C50-12EM6	2	-	6.00	3.35			-		
	C50-12EM8	2	-	8.00	3.35			-		
1 1/2"	C50-15EM2	2	2.75	2.62	2.25	1.12	1.00	-	029-922	69 ft./lbs.
	C50-15EM4	2		4.00	4.50			-		
	C50-15EM6	2		6.00	4.50			-		
	C50-15EM8	2		8.00	4.50			-		
2"	C50-20EM5	2	3.75"	5.62	3.50	1.41	1.50	-	029-928	80 ft./lbs.
	C50-20EM7	2		7.62	3.50			-		
	C50-20EM9	2		9.62	3.50			-		
2 1/2"	C50-25EM6	2	4.00	6.50	4.00	1.50	1.56	-		
10 mm	C50-M10EM2	2	1.00	2.50	4.25	0.75	-	-	029-902	12 ft./lbs.
12 mm	C50-M12EM2	2	1.25	2.62	4.25	0.88	-	-	029-917	17 ft./lbs.
14 mm	C50-M14EM2	2	1.50	2.62	4.38	0.94	-	-	029-918	31 ft./lbs.
16 mm	C50-M16EM3	2	-	3.75	2.13	1.00	-	-	029-925	43 ft./lbs.
20 mm	C50-M20EM3	2	1.75	3.75	2.25	1.00	-	-	029-926	
25 mm	C50-M25EM4	2	2.00	4.00	3.00	1.12	1.00	-	029-922	69 ft./lbs.
	C50F-M20EM4	2		4.00	3.00			-		
32 mm	C50-M32EM4	2	2.50	4.00	2.60	-	-	-		
40 mm	C50-M40EM4	2	2.75	4.00	3.25	-	-	-		

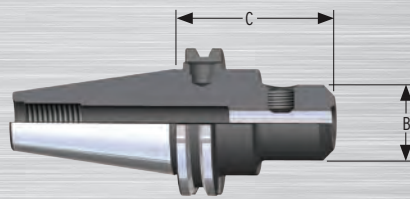
Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. See page 78 for specifications.

End Mill Holders

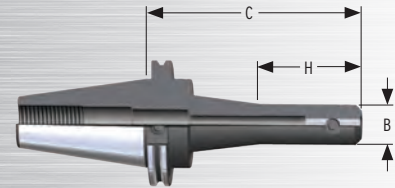
END MILL HOLDERS



Style 1-Short Projection



Style 2-Extended Projection



Style 3-Long Projection

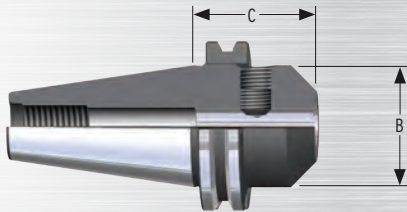
CAT TAPER WITH AD/B COOLANT

CAT 40

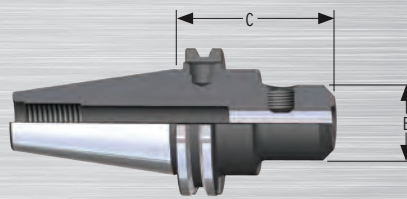
Size	Part Number	Style	B (Dia.)	C	Socket Depth	E	F	H	Set Screw (Incl.)	Tightening Torque	
1/8"	C40BC-01EM1	2	0.69	1.75	3.00	0.38	-	-	029-014	3 ft./lbs.	
3/16"	C40BC-18EM2	2		2.50		0.50	-	-			
1/4"	C40BC-25EM2	2		0.88		2.50	3.80	0.38	-	029-018	7 ft./lbs.
5/16"	C40BC-31EM2	2		1.00		2.50		0.60	-		
3/8"	C40BC-37EM2	2	2.50	0.75	-	-		029-023	12 ft./lbs.		
1/2"	C40BC-50EM2	2	1.25	2.62	3.80	0.88	-	-	029-917	17 ft./lbs.	
5/8"	C40BC-62EM2	2	1.50	2.75	3.62	0.94	-	-	029-918	31 ft./lbs.	
3/4"	C40BC-75EM1	1	1.75	1.75	2.37	1.00	-	-		45 ft./lbs.	
	C40BC-75EM3	3		3.50	3.94		-	-			
1"	C40BC-10EM1	1	2.00	1.75	2.38	1.12	1.00	-	029-926	69 ft./lbs.	
	C40BC-10EM4	2		4.00	4.50			-			-
1 1/4"	C40BC-12EM4	2	2.50	4.00	3.75			-	-		029-922
1 1/2"	C40BC-15EM4	2	2.62	4.00	2.38			-	-		

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. See page 78 for specifications.

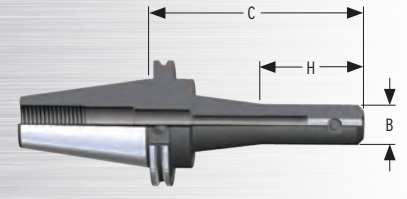
END MILL HOLDERS



Style 1-Short Projection



Style 2-Extended Projection



Style 3-Long Projection

CAT TAPER WITH AD/B COOLANT

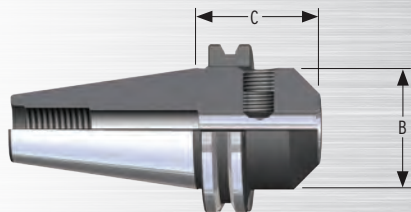
CAT 50

Size	Part Number	Style	B (Dia.)	C	Socket Depth	E	F	H	Set Screw (Incl.)	Tightening Torque
3/8"	C50BC-37EM2	2	1.00	2.50	3.00	0.75	-	-	029-023	12 ft./lbs.
	C50BC-37EM6	3		6.50	3.00		-	3.00		
1/2"	C50BC-50EM2	2	1.25	2.62	3.00	0.88	-	-	029-917	17 ft./lbs.
	C50BC-50EM6	3		6.62	5.00		-	3.13		
5/8"	C50BC-62EM3	2	1.50	3.75	3.50	0.94	-	-	029-918	31 ft./lbs.
	C50BC-62EM7	3		7.75	3.50		-	4.25		
3/4"	C50BC-75EM3	2	1.75	3.75	4.00	1.00	-	-	029-925	45 ft./lbs.
	C50BC-75EM7	3		7.75	4.00		-	4.25		
7/8"	C50BC-87EM3	2	1.88	3.75	4.19	1.00	0.81	-	029-925	48 ft./lbs.
	C50BC-87EM7	3		7.75	4.19		-	4.25		
1"	C50BC-10EM4	2	2.00	4.00	4.44	1.12	-	-	029-926	69 ft./lbs.
	C50BC-10EM8	3		8.00	4.44		-	4.50		
1 1/4"	C50BC-12EM4	2	2.50	4.00	3.35	1.12	1.00	-	029-922	69 ft./lbs.
	C50BC-12EM8	3		8.00	3.35		-	-		
1 1/2"	C50BC-15EM4	2	2.75	4.00	4.50	1.41	-	-	029-928	80 ft./lbs.
	C50BC-15EM8	2		8.00	4.50		-	-		
2"	C50BC-20EM5	2	3.75	5.62	3.50	1.41	1.50	-	029-928	80 ft./lbs.
	C50BC-20EM9	2		9.62	3.50		-	-		

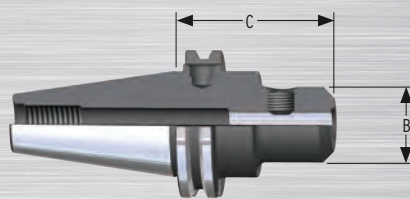
Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. See page 78 for specifications.

End Mill Holders

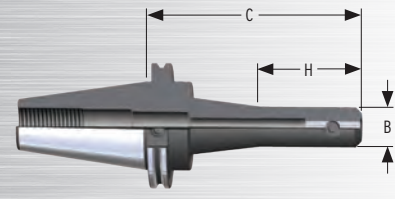
END MILL HOLDERS



Style 1-Short Projection



Style 2-Extended Projection



Style 3-Long Projection

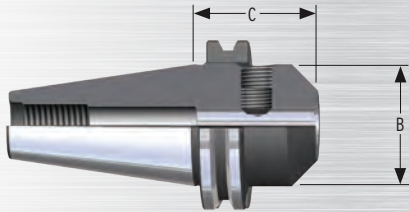
CAT TAPER WITH SIMULFIT® DUAL CONTACT TAPER

CAT 40

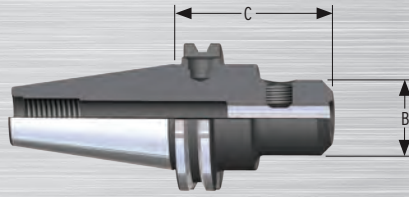
Size	Part Number	Style	B (Dia.)	C	Socket Depth	E	F	H	Set Screw (Incl.)	Tightening Torque	
3/8"	C40F-37EM2	2	1.00	2.50	3.80	0.75	-	-	029-023	12 ft./lbs.	
	C40F-50EM1	1	1.75	1.75							
1/2"	C40F-50EM2	1	1.25	2.62	3.80	0.88	-	-	029-917	17 ft./lbs.	
	C40F-50EM4	2	1.25	4.62							
	C40F-50EM6	3	1.25	6.00							3.12
5/8"	C40F-62EM2	2	1.50	2.75	3.62	0.94	-	-	029-918	31 ft./lbs.	
	C40F-62EM3	3	1.50	3.00							3.21
3/4"	C40F-75EM1	1	1.75	1.75	2.37	1.00	-	-	029-925	45 ft./lbs.	
	C40F-75EM300	2	1.75	3.00							3.94
	C40F-75EM6	2	1.75	6.00							3.94
7/8"	C40F-87EM3	2	1.88	3.75	4.25	1.12	0.81	-	029-926	48 ft./lbs.	
	C40F-10EM1	1	2.00	1.75			2.38	-			
1"	C40F-10EM3	2	2.00	3.00	3.00	1.12	1.00	-	029-926	69 ft./lbs.	
	C40F-10EM4	2	2.00	4.00				4.50			-
	C40F-12EM2	1	2.25	2.00				2.38			1.12
1 1/4"	C40F-12EM4	2	2.50	4.00	3.75	1.12	1.00	-	029-922	69 ft./lbs.	
	C40F-12EM6	2	2.50	6.00				3.75			-
1 1/2"	C40F-15EM462	2	2.62	4.62	2.38	1.12	1.00	-	029-922	69 ft./lbs.	

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. See page 78 for specifications.

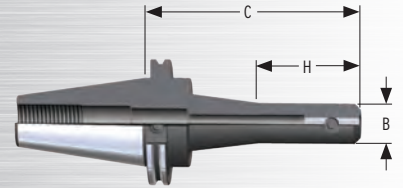
END MILL HOLDERS



Style 1-Short Projection



Style 2-Extended Projection



Style 3-Long Projection

CAT TAPER WITH SIMULFIT® DUAL CONTACT TAPER

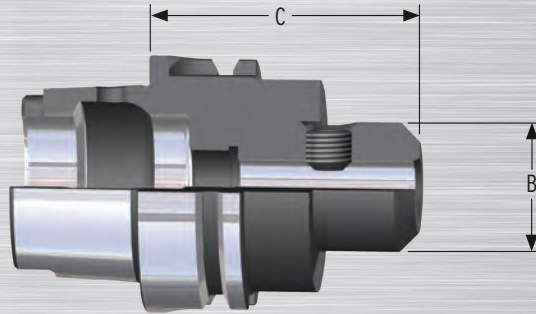
CAT 50

Size	Part Number	Style	B (Dia.)	C	Socket Depth	E	F	H	Set Screw (Incl.)	Tightening Torque
1/2"	C50F-50EM4	2	1.25	4.62	5.00	0.88	-	-	029-917	17 ft./lbs.
	C50F-50EM6	3		6.62	5.00		3.13			
	C50F-50EM8	3		8.00	5.00		3.13			
5/8"	C50F-62EM3	2	1.50	3.75	3.50	0.94	-	-	029-918	31 ft./lbs.
	C50F-62EM5	2		5.75	3.50		-			
	C50F-62EM7	3		7.75	3.50		4.25			
3/4"	C50F-75EM3	2	1.75	3.75	4.00	1.00	-	-	029-925	45 ft./lbs.
3/4"	C50F-75EM5	2	1.75	5.75	4.00	-	-	-	029-925	45 ft./lbs.
7/8"	C50F-87EM3		1.88	3.75	4.19	1.00	0.81	-	029-925	48 ft./lbs.
	C50F-87EM7			7.75	4.19		4.25			
1"	C50F-10EM4		2.00	4.00	4.44	1.12	1.00	-	029-926	69 ft./lbs.
	C50F-10EM6			6.00	4.44		-			
	C50F-10EM8			8.00	4.44		4.50			
1 1/4"	C50F-12EM2		2.75	2.62	3.50	1.12	-	-	029-922	69 ft./lbs.
	C50F-12EM4		4.00	3.35	-					
	C50F-12EM6		2.50	6.00	3.35		-			
	C50F-12EM8		8.00	3.35	-					
1 1/2"	C50F-15EM4		2.75	4.00	4.50	1.41	-	-	029-928	80 ft./lbs.
	C50F-15EM6			6.00	4.50		-			
	C50F-15EM8			8.00	4.50		-			
2"	C50F-20EM5		3.75	5.62	3.50	1.41	1.50	-	029-928	80 ft./lbs.

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. See page 78 for specifications.

End Mill Holders

END MILL HOLDERS



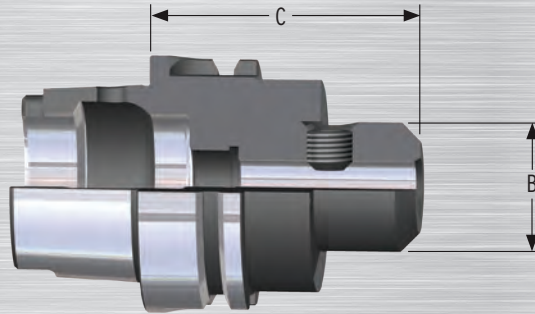
HSK TAPER

HSK 63 FORM A

Size	Part Number	Style	B (Dia.)	C	Socket Depth	E	F	H	Set Screw (Incl.)	Tightening Torque
1/8"	H63-01EM256	2	1.00	2.56	1.40	0.38	-	-	029-014	3 ft./lbs.
	H63-01EM400	2		4.00	2.00		-	-		
3/16"	H63-18EM2	2	1.10	2.56	1.53	0.50	-	-	029-018	4 ft./lbs.
	H63-18EM400	2		4.00	2.50		-	-		
1/4"	H63-25EM2	2	1.10	2.56	1.53	0.38	-	-	029-023	7 ft./lbs.
	H63-25EM400	2		4.00	3.00		-	-		
5/16"	H63-31EM256	2	1.00	2.56	1.53	0.60	-	-	029-023	9 ft./lbs.
	H63-31EM400	2		4.00	3.00		-	-		
3/8"	H63-37EM2	2	1.38	2.56	1.54	0.75	-	-	029-023	12 ft./lbs.
	H63-37EM400	2	1.00	4.00	2.00		-	-		
1/2"	H63-50EM3	2	1.63	3.13	2.10	0.88	-	-	029-917	17 ft./lbs.
	H63-50EM400	2	1.25	4.00	2.20		-	-		
5/8"	H63-62EM3	2	1.88	3.13	2.10	0.94	-	-	029-918	31 ft./lbs.
	H63-62EM400	2	1.75	4.00	2.90		-	-		
3/4"	H63-75EM3	2	1.94	3.13	2.12	1.00	-	-	029-925	45 ft./lbs.
	H63-75EM400	2		4.00	2.75		-	-		
1"	H63-10EM4	2	2.56	4.25	3.00	1.12	-	-	029-926	69 ft./lbs.
1 1/4"	H63-12EM4	2	2.81	4.25	3.00		1.00	-		

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. See page 78 for specifications.

END MILL HOLDERS



HSK TAPER

HSK 100 FORM A

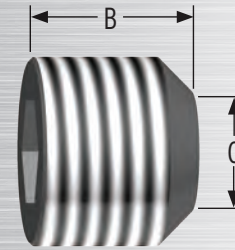
Size	Part Number	Style	B (Dia.)	C	Socket Depth	E	F	H	Set Screw (Incl.)	Tightening Torque
1/4"	H100-25EM3	2	1.10	3.12	1.98	0.38	-	-	029-018	7 ft./lbs.
3/8"	H100-37EM3	2	1.38	3.13		0.75	-	-	029-023	12 ft./lbs.
1/2"	H100-50EM3	2	1.63			2.98	0.88	-	-	029-917
5/8"	H100-62EM4	2	1.88	4.00	2.86	0.94	-	-	029-918	31 ft./lbs.
3/4"	H100-75EM4	2	1.94			1.00	-	-	029-025	45 ft./lbs.
1"	H100-75EM600	2	1.75	6.00	3.12	1.12	1.00	-	029-926	69 ft./lbs.
	H100-10EM4	2	2.56	4.00	2.85			-		
1 1/4"	H100-10EM600	2	2.00	6.00	4.50			-		
	H100-12EM4	2	2.81	4.00	2.85			-		
1 1/2"	H100-12EM600	2	2.75	6.00	3.35			-		
	H100-15EM4	2	3.00	4.00	3.63			-		
	H100-15EM600	2	2.75	6.00	4.00	-				

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. See page 78 for specifications.

End Mill Holder Accessories

SET SCREWS

Socket Head Set Screw	029-014	10 - 32	.25	-	3/32	3 ft/lbs
	029-018	1/4 - 28		-	1/8	7 ft/lbs
	029-902	3/8 - 24	.31	0.282	3/16	13 ft/lbs
	029-917	7/16 - 20	.38	0.332	7/32	19 ft/lbs
	029-918	9/16 - 18	.43	0.402	1/4	31 ft/lbs
	029-920	5/8 - 18	.62	0.454	7/16	48 ft/lbs
029-922	3/4 - 16	0.517		3/8	69 ft/lbs	
Weldon	029-924	3/8 - 24	.38	0.282	3/16	13 ft/lbs
	029-955	5/8 - 18	.38	.520	5/16	48 ft/lbs
	029-925	5/8 - 18	.50	0.454	5/16	48 ft/lbs
	029-945	5/8 - 18		0.52	5/16	48 ft/lbs
	029-926	3/4 - 16		0.517	3/8	69 ft/lbs
	029-928	1 - 14	.88	0.702	9/16	80 ft/lbs
	029-929	7/16 - 20	.31	0.332	7/32	19 ft/lbs

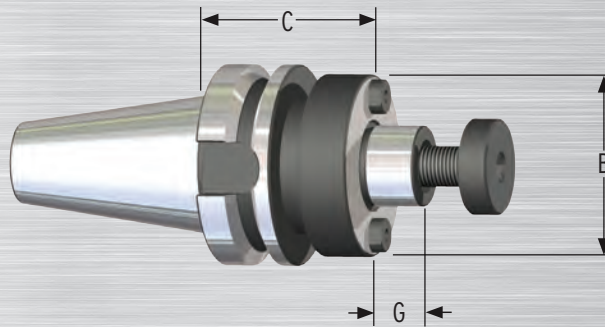




SHELL MILL HOLDERS:

- First level quality and service
- Available in a variety of coolant entry and delivery configurations
 - Toolholding Accessories
 - Available with Simulfit (dual contact) tapers
 - CAT, BT and HSK

SHELL MILL HOLDERS



BT TAPER

BT 30

Size	Part Number	B (Dia.)	C	G	Drive Key (Incl.)	Lock Screw (Incl.)	Cap Screw (Incl.)
3/4"	B30-75SM118	1.18	1.75	0.68	75KY	-	028-192
1"	B30-10SM177	1.77	2.25		10KY	10LS	028-188

BT 40

Size	Part Number	B (Dia.)	C	G	Drive Key (Incl.)	Lock Screw (Incl.)	Cap Screw (Incl.)
3/4"	B40-75SM2	1.75	2.00	0.68	75KY	-	028-192
	B40-75SM4		4.00				
1"	B40-10SM2	2.25	2.00		10KY	10LS	028-188
	B40-10SM4		4.00				
1 1/4"	B40-12SM2	2.75	2.25	0.94	12KY	12LS	028-193
1 1/2"	B40-15SM2	3.75			15KY	15LS	-

BT TAPER WITH SIMULFIT® DUAL CONTACT TAPER

BT 30

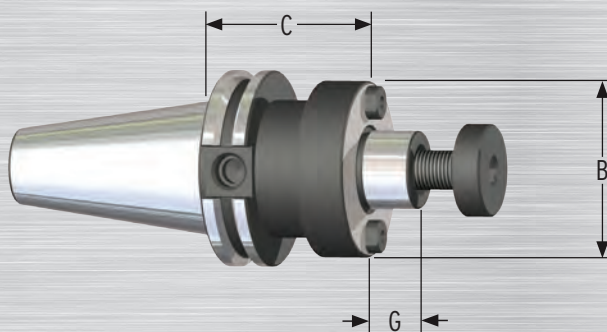
Size	Part Number	B (Dia.)	C	G	Drive Key (Incl.)	Lock Screw (Incl.)	Cap Screw (Incl.)
3/4"	B30F-75SM118	1.00	1.75	0.68	75KY	-	028-192
1"	B30F-10SM177	1.77	2.25		10KY	10LS	028-188

BT 40

Size	Part Number	B (Dia.)	C	G	Drive Key (Incl.)	Lock Screw (Incl.)	Cap Screw (Incl.)
3/4"	B40F-75SM2	1.75	2.00	0.68	75KY	-	028-192
	B40F-75SM4		4.00				
1"	B40F-10SM2	2.25	2.00		10KY	10LS	028-188
1 1/4"	B40F-12SM2		2.75				
1 1/2"	B40F-15SM2	3.75	2.25	0.94	15KY	15LS	-

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

SHELL MILL HOLDERS



CAT TAPER

CAT 40

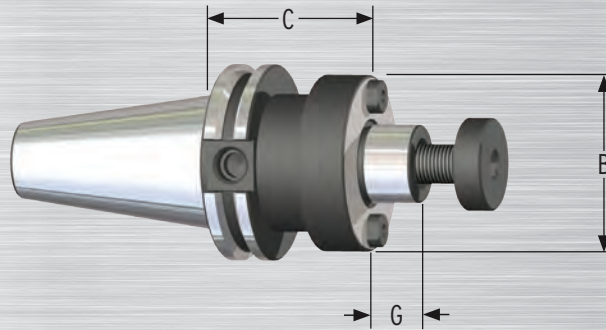
Size	Part Number	B (Dia.)	C	G	Drive Key (Incl.)	Lock Screw (Incl.)	Cap Screw (Incl.)
3/4"	C40-75SM1	1.75	1.38	0.68	75KY	-	028-192
	C40-75SM2		1.50			-	
	C40-75SM200		2.00			-	
	C40-75SM4		4.00			-	
	C40BC-75SM600		6.00			-	
1"	C40-10SM1	2.25	1.00	0.68	10KY	10LS	028-188
	C40-10SM2		2.00				
	C40-10SM4		4.00				
1 1/4"	C40-12SM1	2.75 *	1.62	0.68	12KY	12LS	028-193
	C40-12SM2	2.75	2.25				
	C40-12SM4	4.00					
1 1/2"	C40-15SM2	3.75	2.40	0.94	15KY	15LS	-
	C40-15SM4		4.00				-

CAT 50

Size	Part Number	B (Dia.)	C	G	Drive Key (Incl.)	Lock Screw (Incl.)	Cap Screw (Incl.)
3/4"	C50-75SM1	1.75	1.50	0.68	75KY	-	028-192
	C50-75SM3		3.50			-	
	C50-75SM5		5.50			-	
1"	C50-10SM2	2.25	2.00	0.68	10KY	10LS	028-188
	C50-10SM4		4.00				
	C50-10SM6		6.00				
	C50-10SM8		8.00				
1 1/4"	C50-12SM1	2.75	1.50	0.68	12KY	12LS	028-193
	C50-12SM3		3.50				
	C50-12SM5		5.50				

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

SHELL MILL HOLDERS



CAT TAPER

CAT 50

Size	Part Number	B (Dia.)	C	G	Drive Key (Incl.)	Lock Screw (Incl.)	Cap Screw (Incl.)
1 1/2"	C50-15SM2	3.75	2.00	0.94	15KY	15LS	-
	C50-15SM4		4.00				-
	C50-15SM6		6.00				-
2"	C50-20SM2	4.88	2.40	1.12	20KY	20LS	-
	C50-20SM4		4.00				-
	C50-20SM6		6.00				-
2 1/2"	C50-25SM2	4.88	2.40	1.12	25KY	25LS	-
	C50-25SM4		4.00				-
	C50-25SM6	6.00	-				
	C50-25FM1	5.06	2.25				-

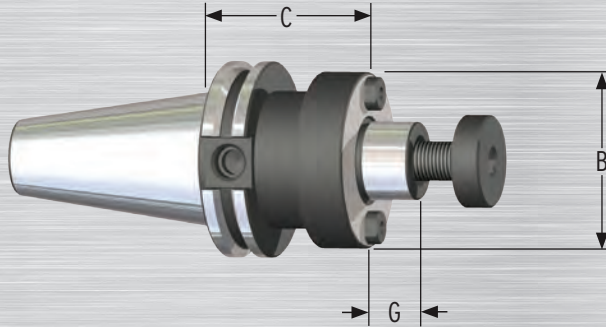
CAT TAPER WITH AD/B COOLANT AND COOLANT PORTS

CAT 40

Size	Part Number	B (Dia.)	C	G	Drive Key (Incl.)	Lock Screw (Incl.)	Cap Screw (Incl.)
3/4"	C40BC-75SM150C	1.75	1.50	0.68	75KY	-	028-192
	C40BC-75SM400C		1.50			-	
1"	C40BC-10SM200C	2.25	2.00	0.94	10KY	10LS	028-188
	C40BC-10SM400C		4.00				-
1 1/4"	C40BC-12SM225C	2.75	2.25	1.12	12KY	12LS	028-193
	C40BC-12SM400C		4.00				-
1 1/2"	C40BC-15SM240C	3.75	2.40	0.94	15KY	15LS	-
	C40BC-15SM400C		4.00				-

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

SHELL MILL HOLDERS



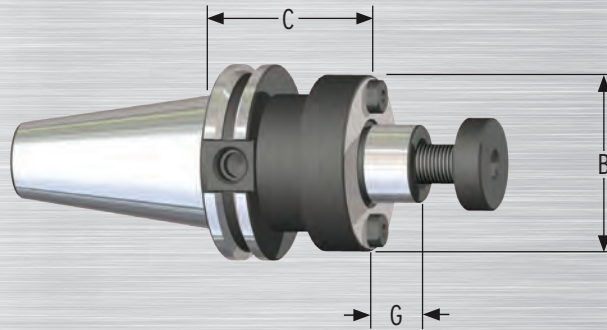
CAT TAPER WITH AD/B COOLANT AND COOLANT PORTS

CAT 50

Size	Part Number	B (Dia.)	C	G	Drive Key (Incl.)	Lock Screw (Incl.)	Cap Screw (Incl.)
3/4	C50BC-75SM150C	1.75	1.50	0.68	75KY	-	028-192
	C50BC-75SM350C		3.50			-	
	C50BC-75SM550C		5.50			-	
1	C50BC-10SM200C	2.25	2.00	0.68	10KY	10LS	028-188
	C50BC-10SM400C		6.00				
	C50BC-10SM600C		4.00				
1 1/4"	C50BC-12SM150C	2.75	1.50	0.94	12KY	12LS	028-193
	C50BC-12SM350C		3.50				
	C50BC-12SM550C		0.50				
1 1/2"	C50BC-15SM240C	3.75	2.00	0.94	15KY	15LS	-
	C50BC-15SM400C		4.00				
	C50BC-15SM600C		6.00				
2"	C50BC-20SM240C	4.88	2.40	1.12	20KY	20LS	-
	C50BC-20SM400C		4.00				
2 1/2"	C50BC-25SM240C		2.40	1.12	25KY	25LS	-

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

SHELL MILL HOLDERS



CAT TAPER WITH SIMULFIT® DUAL CONTACT TAPER

CAT 40

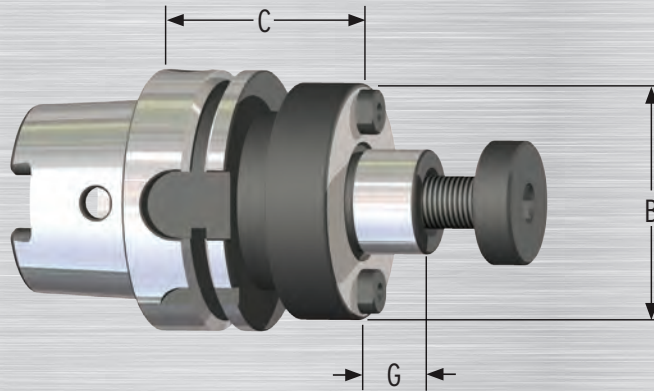
Size	Part Number	B (Dia.)	C	G	Drive Key (Incl.)	Lock Screw (Incl.)	Cap Screw (Incl.)
3/4"	C40F-75SM1	1.75"	1.38"	0.68	75KY	-	028-192
	C40F-75SM200	1.75"	2.00"			-	
	C40F-75SM4	1.75"	4.00"			-	
1"	C40F-10SM1	2.25"	2.40"		10KY	10LS	028-188
	C40F-10SM2	2.25"	2.40"				
	C40F-10SM4	2.25"	2.40"				
1 1/4"	C40F-12SM1	2.75"	1.62"	12KY	12LS	028-193	
	C40F-12SM2	2.75"	2.25"				
1 1/2"	C40F-15SM2	3.75"	2.40"	0.94	15KY	15LS	-
	C40F-15SM4	3.75"	4.00"				-

CAT 50

Size	Part Number	B (Dia.)	C	G	Drive Key (Incl.)	Lock Screw (Incl.)	Cap Screw (Incl.)
3/4"	C50F-75SM1	1.75"	1.50"	0.68	75KY	-	028-192
	C50F-75SM3	1.75"	3.50"			-	
	C50F-75SM5	1.75"	5.50"			-	
1"	C50F-10SM2	2.25"	2.00"		10KY	10LS	028-188
	C50F-10SM4	2.25"	4.00"				
	C50F-10SM6	2.25"	6.00"				
	C50F-10SM8	2.25"	8.00"				
1 1/4"	C50F-12SM3	2.75"	3.50"	12KY	12LS	028-193	
	C50F-12SM5	2.75"	5.50"				
	C50F-15SM2	3.75"	2.00"				
1 1/2"	C50F-15SM4	3.75"	4.00"	0.94	15KY	15LS	-
	C50F-15SM6	3.75"	6.00"				-
	C50F-20SM2	4.88"	2.40"			20KY	20KY
C50F-20SM4	4.88"	4.00"		-			
2 1/2"	C50F-25SM2	4.88"	2.40"	1.12	25KY	25LS	-

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

SHELL MILL HOLDERS



HSK TAPER HSK 63 FORM A

Size	Part Number	B (Dia.)	C	G	Drive Key (Incl.)	Lock Screw (Incl.)	Cap Screw (Incl.)
3/4"	H63-75SM2	1.75	2.37	0.68	75KY	-	028-192
1"	H63-10SM2	2.25	2.63		10KY	10LS	028-188
1 1/4"	H63-12SM2	2.75	2.62		12KY	12LS	028-193
1 1/2"	H63-15SM2	3.75	2.62	0.94	15KY	15LS	-

HSK 100 FORM A

Size	Part Number	B (Dia.)	C	G	Drive Key (Incl.)	Lock Screw (Incl.)	Cap Screw (Incl.)
3/4"	H100-75SM3	1.75	3.00	0.68	75KY	-	028-192
1"	H100-10SM2	2.25	2.37		10KY	10LS	028-188
1-1/4"	H100-12SM1	2.75	1.87		12KY	12LS	028-193
1-1/2"	H100-15SM2	3.75	2.88	0.94	15KY	15LS	-
2"	H100-20SM2	4.88	2.37		20KY	20LS	-
2-1/2"	H100-25SM2	4.88	2.87	1.12	25KY	25LS	-

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

Shell Mill Holder Accessories

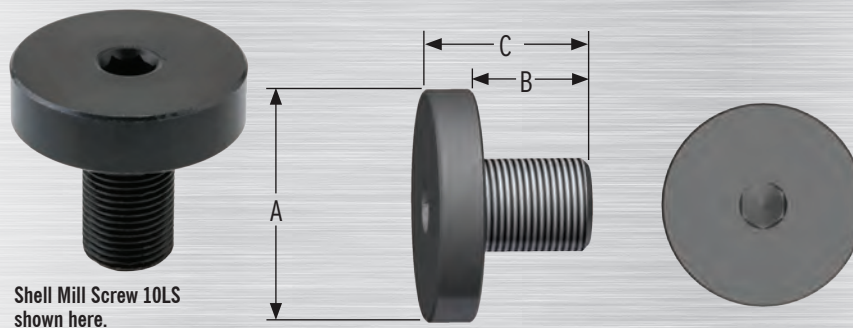
100 Production Toolholding Solutions

LOCK SCREWS

Part Number	A	B	C	Thread	Hex	Torque
75LS	0.88	0.38	0.97	3/8 - 24	.250	45 ft./lbs.
10LS	1.19	0.28	1.20	1/2 - 20	.312	60 ft./lbs.
12LS	1.50	0.50	1.38	5/8 - 18	.312	70 ft./lbs.
15LS	1.88	0.50	1.75	3/4 - 16	.375	75 ft./lbs.
20LS	2.50	0.50	1.94	1 - 14	.500	100 ft./lbs.
25LS	3.12	0.50	1.95	1 - 14	.500	
75LSC	0.88	0.38	0.97	3/8 - 24	.250	45 ft./lbs.
10LSC	1.19	0.28	1.20	1/2 - 20	.312	60 ft./lbs.
15LSC	1.88	0.50	1.75	3/4 - 16	.375	75 ft./lbs.

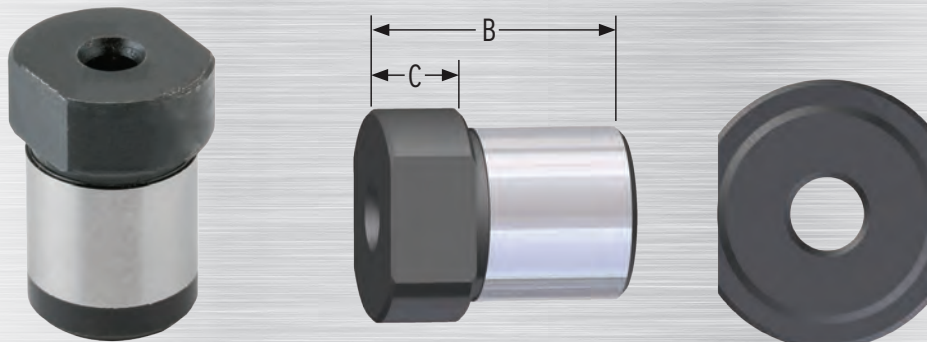
SOCKETHEAD CAP SCREWS

Part Number	A	B	C	Thread	Hex	Torque
028-188	0.75	0.50	1.75	1/2 - 20	.375	60 ft./lbs.
028-192	0.56	0.37	1.37	3/8 - 24	.312	45 ft./lbs.
028-193	0.94	0.62	1.87	5/8 - 18	.500	70 ft./lbs.
028-188C	0.75	0.50	1.75	1/2 - 20	.375	60 ft./lbs.
028-192C	0.56	0.37	1.37	3/8 - 24	.312	45 ft./lbs.



DRIVE KEYS

Part Number	Key	B	C
75KY	.31	.52	.16
10KY	.38	.67	.19
12KY	.50	.86	.25
15KY	.62	1.04	.31
20KY	.75	1.10	.38
25KY	1.00	1.23	.50

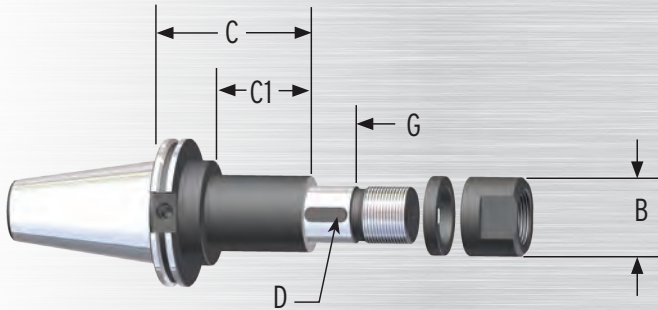




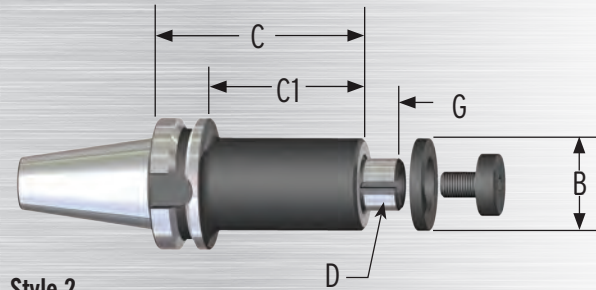
PRODUCTION TOOLHOLDERS:

- Stub Arbors, Morse Tapers, Jacobs Tapers and other production tooling systems
- First level quality and service
- Toolholding Accessories
- BT, CAT and HSK

STUB ARBOR TAPERS



Style 1



Style 2

BT TAPER

BT 40

Size	Part Number	Style	C	C1	G	D	Pilot	B	Drive Key (Incl.)	Lock Screw (Incl.)
1"	B40-10SA400	2	4.00	2.97	0.72	0.25	1.00	1.75	SAK-V10	10LS
1 1/4"	B40-12SA400	2		2.94		0.31	1.25		SAK-12	013-503

CAT TAPER

CAT 40

Size	Part Number	Style	C	C1	G	D	Pilot	B	Drive Key (Incl.)	Lock Screw (Incl.)
1"	C40-10SA4	1	4.00	2.62	1.25	0.25	1.00	1.56	SAK-10	013-502
	C40-10SA400	2		3.25	0.72			1.75	SAK-V10	10LS
1 1/4"	C40-12SA4	1		2.45	1.25	0.31	1.25	1.88	SAK-12	013-503
	C40-12SA400	2		3.25	0.72			1.75	SAK-V12	12LS
1 1/2"	C40-15SA400	2		1.50	0.98	0.37	1.50	2.12	SAK-V15	15LS

CAT 50

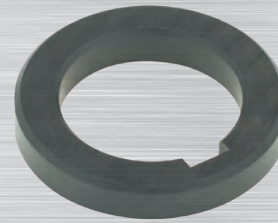
Size	Part Number	Style	C	C1	G	D	Pilot	B	Drive Key (Incl.)	Lock Screw (Incl.)
1"	C50-10SA4	1	4.00	2.62	1.25	0.25	1.00	1.56	SAK-10	013-502
	C50-10SA500	2	5.00	1.70	0.72			1.50	SAK-V10	10LS
	C50-10SA6	1	6.00	4.62	1.25			1.56	SAK-10	013-502
1 1/4"	C50-12SA4	1	4.00	2.62		0.31	1.25	1.88	SAK-12	013-503
	C50-12SA6	1	6.00	4.62	1.75			SAK-V12	12LS	
	C50-12SA600	2		1.50	0.72			1.75	SAK-V12	12LS
1 1/2"	C50-15SA4	1	4.00	2.62	1.25	0.37	1.50	2.00	SAK-15	013-501
	C50-15SA6	1	6.00	1.62	0.98			2.12	SAK-V15	15LS
2"	C50-20SA6	1		5.25	1.25	0.50	2.00	2.75	SAK-20	013-500

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

Stub Arbor Accessories

SPACERS

Size	Part Number	Thickness
1.00"	014-906	.125
	014-907	.375
	014-908	.750
	014-921	.250
1.25"	014-903	.125
	014-904	.375
	014-905	.750
	014-915	.250
1.50"	014-901	.500
	014-902	.250
	014-909	.125
	014-910	.375
	014-911	.750
2.00"	014-912	.125
	014-913	.375
	014-914	.750

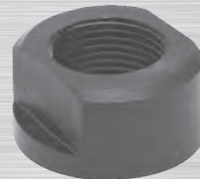


Stub Arbor Spacer 014-921 and Stub Arbor Nut 013-502 shown here.



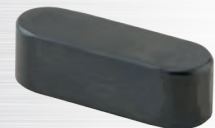
NUTS

Size	Part Number	Thickness	Length
1.00"	013-502	1.00 - 14	1.00
1.25"	013-503	1.25 - 12	1.25
1.50"	013-501	1.50 - 12	1.50
2.00"	013-500	2.00 - 12	1.75



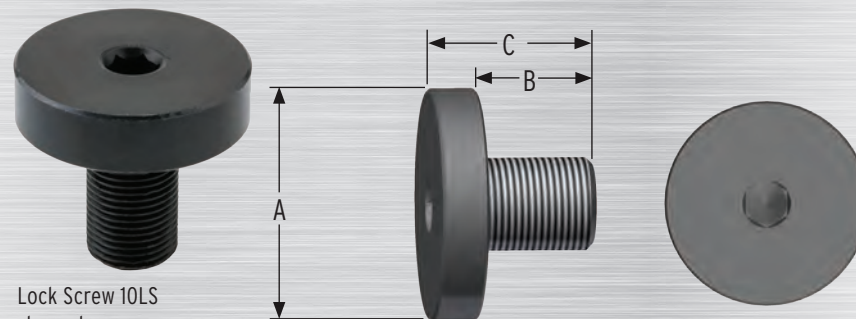
KEYS

Size	Part Number
1.00"	SAK-10
	SAK-V10
1 1/4"	SAK-12
	SAK-V12
1 1/2"	SAK-15
	SAK-V15
2.00"	SAK-20



LOCK SCREWS

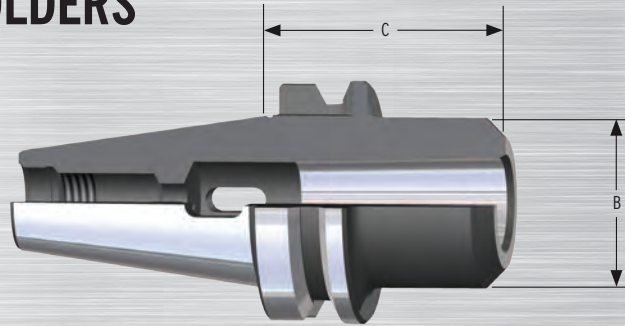
Part Number	A	B	C	Thread	Hex	Style	Torque
75LS	0.88	0.38	0.97	3/8 - 24	.250	Lock Screw	45 ft./lbs.
10LS	1.19	0.28	1.20	1/2 - 20	.312	Lock Screw	60 ft./lbs.
12LS	1.50	0.50	1.38	5/8 - 18	.312	Lock Screw	70 ft./lbs.
15LS	1.88	0.50	1.75	3/4 - 16	.375	Lock Screw	75 ft./lbs.
20LS	2.50	0.50	1.94	1 - 14	.500	Lock Screw	100 ft./lbs.
25LS	3.12	0.50	1.95	1 - 14	.500	Lock Screw	



Lock Screw 10LS shown here.

Morse Taper Holders

MORSE TAPER HOLDERS



BT TAPER

BT 40

Size	Part Number	A (Dia.)	B (Dia.)	C
2	B40-02MT1	0.700	1.75	1.75
3	B40-03MT2	0.938		2.50

CAT TAPER

CAT 40

Size	Part Number	A (Dia.)	B (Dia.)	C
3	C40-03MT2	0.938	1.75	2.50
4	C40-04MT3	1.231	2.00	3.50

CAT TAPER

CAT 40

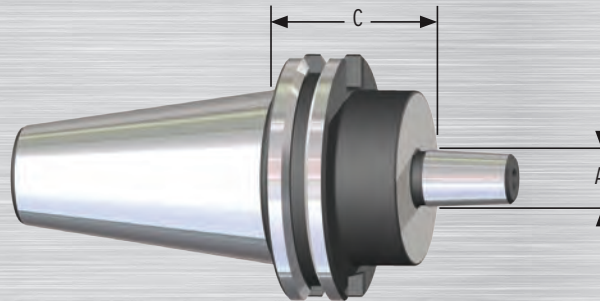
Size	Part Number	A (Dia.)	B (Dia.)	C
1	C40-01MT1	0.475	1.75	1.75
2	C40-02MT1	0.700		

CAT 50

Size	Part Number	A (Dia.)	B (Dia.)	C
1	C50-01MT1	0.475	2.75	1.50
2	C50-02MT1	0.700		
3	C50-03MT2	0.938	2.25	2.31
4	C50-04MT3	1.231		3.18
5	C50-05MT4	1.748		4.75

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

JACOBS TAPER HOLDERS



BT TAPER

BT 40

Size	Part Number	A (Dia.)	C
2	B40-02JT1	0.559	1.18
3	B40-03JT1	0.811	
6	B40-06JT1	0.676	
33	B40-33JT1	0.624	

CAT TAPER

CAT 40

Size	Part Number	A (Dia.)	C
4	C40-04JT1	1.124	1.50
6	C40-06JT1	0.676	
33	C40-33JT1	0.624	

CAT TAPER

CAT 40

Size	Part Number	A (Dia.)	B (Dia.)
2	C40-02JT1	0.559	1.50
3	C40-03JT1	0.811	

CAT 50

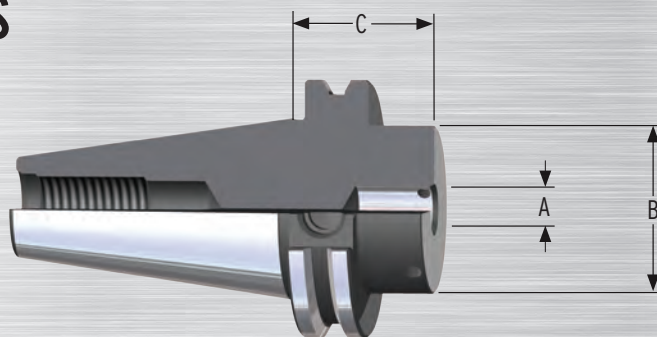
Size	Part Number	A (Dia.)	C
2	C50-02JT1	0.559	1.50
3	C50-03JT1	0.811	
4	C50-04JT1	1.124	
6	C50-06JT1	0.676	
33	C50-33JT1	0.624	

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

Probe Holders and Blank Bars

106 Production Toolholding Solutions

PROBE HOLDERS



BT TAPER

BT 30

Part Number	A (Dia.)	B (Dia.)	C	Set Screw (Incl.)
B30-M11PH1	.440	1.625	1.702	029-092

BT 30 HAAS

Part Number	A (Dia.)	B (Dia.)	C	Set Screw (Incl.)
B30H-M11PH1	.440	1.625	1.702	029-092

BT 40

Part Number	A (Dia.)	B (Dia.)	C	Set Screw (Incl.)
B40-M11PH1	.440	1.625	1.702	029-092

CAT TAPER

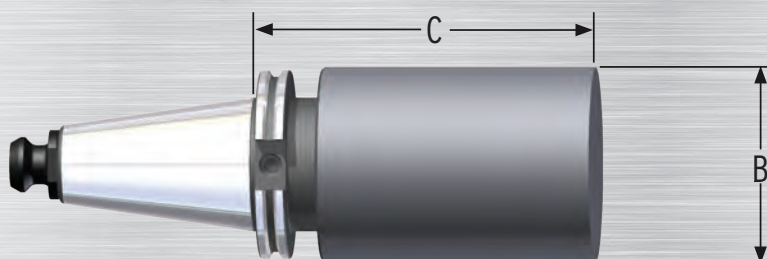
CAT 40

Part Number	A (Dia.)	B (Dia.)	C	Set Screw (Incl.)
C40-M11PH1	0.440	1.625	1.390	029-092

CAT 50

Part Number	A (Dia.)	B (Dia.)	C	Set Screw (Incl.)
C50-M11PH1	0.440	1.625	1.390	029-092

BLANK BARS



BT TAPER

BT 30

Size	Part Number	B	C
	B30-23BB500	2.38	5.00

BT 40

Size	Part Number	B	C
	B40-30BB700	3.00	7.00

CAT TAPER

CAT 50

Size	Part Number	B	C
	C50-27BB8	2.75	8.00
	C50-40BB7	4.00	7.00
	C50-40BB1		11.00
	C50F-40BB1		
	C50-61BB7	6.12	7.00

CAT TAPER

CAT 40

Size	Part Number	B	C
	C40-25BB8	2.50	8.00

HSK TAPER

HSK 63

Size	Part Number	B	C
	H63-102BB90	4.01	3.54
	H63-64BB100	2.52	3.94

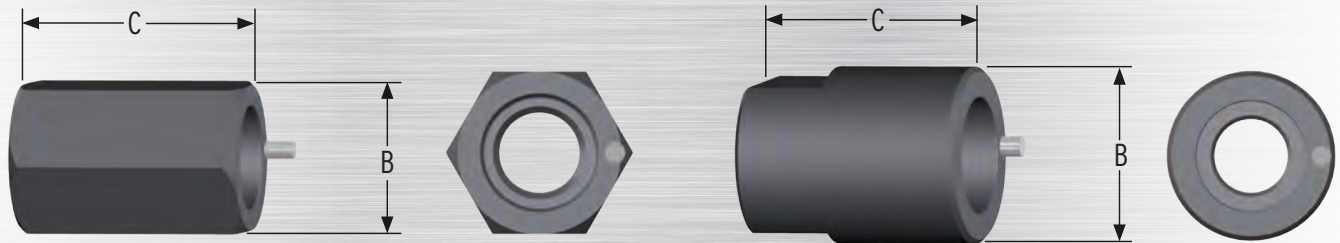
Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

TIGHTENING FIXTURES



BENCH OR VISE MOUNTED TYPE

Size	Part Number	B	C	Thread	Style
30	TF30	2.50	3.50	3/8 - 16	HEX
40	TF40	2.50	4.00	3/8 - 16	HEX
50	TF50	4.25	5.50	3/8 - 16	FLATS - 3.50



BENCH MOUNT SWIVEL:

- For Tool locking and retention knob mounting.
- Mounts directly to workbench.

BENCH MOUNTED SWIVEL

Taper Size	Part Number
BT30	TFBS30
CAT40/BT40	TFBS40
CAT50/BT50	TFBS50
HSK63A	TFBSH63
HSK100A	TFBSH100

Retention Knobs

RETENTION KNOBS

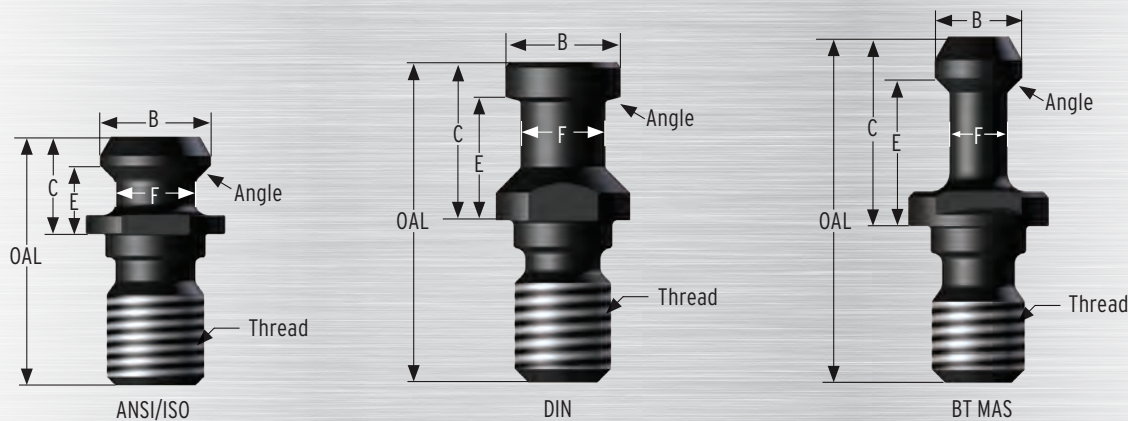
Parlec offers retention knobs for over 100 styles of machine tools.

- Material, heat treat, and dimensions are to ANSI specifications.
- Manufactured using alloy steel.
- Case hardened to ensure long service life.
- Core is tempered for tough shock resistance.



WARNING: Machine tool manufacturers have used many various styles and sizes of retention knobs. They often look very similar and appear to be interchangeable. The use of the incorrect knob, or the incorrect use of a knob, may result in injury or property damage. It is the responsibility of the end user to check that the supplied knobs are correct for the machine tool and taper type. It is very important not to intermix metric retention knobs with inch toolholders. Be sure to fully tighten the retention knob. Failure to do so may result in the toolholder coming loose during operation.

The use of sealing and thread lock is recommended. Overtightening may cause a toolholder taper deformation.



ANSI/ISO RETENTION KNOBS - INCH

Taper Size	Part Number	Thread	Angle	OAL	B	C	E	F	Coolant Hole	Specification/Feature
40 Taper	40NTRK	5/8-11	45	1.68	0.7	0.64	0.44	0.49	-	ANSI STD Solid
	40TRK	5/8-11	45	1.68	0.74"	0.64	0.44	0.49	0.281	ANSI STD
50 Taper	50NTRK	1-8	45	2.54	1.14	1	0.7	0.82	-	ANSI STD Solid
	50TRK	1-8	45	2.54	1.14	1	0.7	0.82	0.468	ANSI STD
	50TRK-390-P	1-8	45	2.54"	1.14"	1.00"	0.70"	0.82"	0.390"	ANSI STD
	50TRK-500	1-8	45	2.54"	1.14"	1.00"	0.70"	0.82"	0.500"	ANSI STD
	M50TRK	1-8	45	2.3	1.14	1	0.7	0.82	0.468	MAZAK O-Ring Seal Groove

RETENTION KNOBS

DIN RETENTION KNOBS - INCH

Style	Part Number	Thread	Angle	OAL	B	C	E	F	Coolant Hole	Specification/Feature
40 Taper	4008TRK	5/8-11	75	2.06"	0.744"	1.024"	0.787"	0.549"	-	-
	4008TRKC	5/8-11	75	2.06"	0.744"	1.024"	0.787"	0.549"	0.276"	-
	4010TRK	5/8-11	75	2.13"	0.748"	1.142"	0.906"	0.551"	0.276"	-
	4030TRK	5/8-11	75	2.06	0.75	1.02	0.79	0.55	0.281	DIN For Inch Shank
50 Taper	5030TRK	1-8	75	2.88	1.1	1.35	0.99	0.83	0.468	DIN For Inch Shank

MAS BT RETENTION KNOBS - INCH

Style	Part Number	Thread	Angle	OAL	B	C	E	F	Coolant Hole	Specification/Feature
30 Taper	3001TRK	1/2-13	45	1.42	0.393	0.787	0.63	0.236	-	CHIRON INCH SHANK
40 Taper	4001TRK	5/8-11	90	2.32	0.588	1.275	0.988	0.393	-	MAS CAT 90 DEG
	4001TRKC	5/8-11	90	2.32	0.588	1.275	0.988	0.393	0.197	MAS CAT 90 DEG
	4005TRK	5/8-11	45	2.31	0.588	1.268	0.988	0.393	-	MAS CAT 45 DEG
	4005TRKC	5/8-11	45	2.31	0.588	1.268	0.988	0.393	0.157	MAS CAT 45 DEG
	4006TRK	5/8-11	45	2.45	0.588	1.264	0.99	0.393	5/8/2011	45
	4009TRK	5/8-11	45	2.31	0.588	1.264	0.99	0.393	-	MAS CAT 45 DEG (Haas)
	4009TRKC	5/8-11	45	2.31	0.588	1.264	0.99	0.393	0.197	MAS CAT 45 DEG (Haas)
	4014TRK	5/8-11	60	2.31	0.588	1.268	0.99	0.393	-	MAS CAT 60 DEG
	4014TRKC	5/8-11	60	2.31	0.588	1.268	0.99	0.393	0.197	MAS CAT 60 DEG
	4015TRK	5/8-11	60	2.31	0.588	1.268	0.99	0.393	-	MAS CAT 60 DEG (Thin Flange)
	C400TRK	5/8-11	45	2.48	0.588	1.436	1.137	0.406	-	MAS CAT 45 DEG
	C400TRKC	5/8-11	45	2.48	0.588	1.436	1.137	0.404	0.157	MAS CAT 45 DEG
	TOYO40TRK	5/8-11	45	2.25	0.588	1.268	0.988	0.393	0.118	TOYODA O'Ring Seal
	4008TRK	5/8-11	75	2.06	0.744	1.024	0.787	0.549	-	-
	4008TRKC	5/8-11	75	2.06	0.744	1.024	0.787	0.549	0.276	-
	4010TRK	5/8-11	75	2.13	0.748	1.142	0.906	0.551	0.276	-
50 Taper	5001TRK	1-8	90	3.31	0.904	1.77	1.378	0.667	-	MAS CAT 90 DEG
	5001TRKC	1-8	90	3.31	0.904	1.77	1.378	0.667	0.25	MAS CAT 90 DEG
	5005TRK	1-8	45	3.33	0.904	1.791	1.378	0.667	-	MAS CAT 45 DEG
	5005TRKC	1-8	45	3.33	0.904	1.791	1.378	0.667	0.25	MAS CAT 45 DEG
	5014TRK	1-8	60	3.31	0.904	1.77	1.378	0.667	-	MAS CAT 60 DEG
	5014TRKC	1-8	60	3.31	0.904	1.77	1.378	0.667	0.25	MAS CAT 60 DEG
	5021TRK	1-8	90	2.77	0.94	1.234	0.907	0.708	-	MAS CAT 90 DEG (Thin Flange)
	MAK050TRK	1-8	45	3.14	0.904	1.78	1.386	0.667	0.236	MAKINO
	MH500TRK	1-8	90	2.32	0.904	1.78	1.386	0.667	-	-
	MH500TRKC	1-8	90	2.32	0.904	1.78	1.386	0.667	0.25	-
MS5034TRK	1-8	90	2.76	0.94	1.218	0.903	0.706	0.315	-	
OKM050TRK	1-8	60	3.25	0.904	1.77	1.378	0.667	0.236	MAS CAT 60 DEG (O'ring)	
TOYO50TRK	1-8	45	3.55	0.904	1.78	1.386	0.667	0.236	TOYODA O'Ring Seal	

Retention Knobs

RETENTION KNOBS

ANSI/ISO RETENTION KNOBS - METRIC

Style	Part Number	Thread	Angle	OAL	B	C	E	F	Coolant Hole	Specification/Feature
40 Taper	A40TRK	M16 - 2	45	1.65	0.74	0.64	0.44	0.49	0.281	ANSI For Metric Shank
50 Taper	A50TRK	M24 - 3	45	2.58	1.14	1	0.7	0.82	0.468	ANSI For Metric Shank

DIN RETENTION KNOBS - METRIC

Style	Part Number	Thread	Angle	OAL	B	C	E	F	Coolant Hole	Specification/Feature
40 Taper	4020TRK	M16-2	15	2.26"	0.748"	1.142"	0.905"	0.55"	0.276"	-
	4020NTRK	M16-2	15	2.26"	0.748"	1.142"	0.905"	0.55"	-	-
	DIN40ATRK	M16-2	75	2.12	0.75	1.02	0.79	0.55	0.276	DIN STD Coolant

MAS BT RETENTION KNOBS - METRIC

Style	Part Number	Thread	Angle	OAL	B	C	E	F	Coolant Hole	Specification/Feature
30 Taper	3002TRK	M12-1.75	45	1.42	0.393	0.787	0.63	0.236	-	CHIRON METRIC SHANK
	3003TRK	M12-1.75	45	1.7	0.43	0.908	0.71	0.273	-	MAS BT 45 DEG
	3003TRKC	M12-1.75	45	1.7	0.43	0.908	0.71	0.273	0.125	MAS BT 45 DEG
	3004TRK	M12-1.75	60	1.7	0.43	0.908	0.71	0.273	-	MAS BT 60 DEG
40 Taper	4002TRK	M16-2	90	2.36	0.588	1.376	1.102	0.393	-	MAS BT 90 DEG
	4003TRK	M16-2	45	2.36	0.588	1.376	1.102	0.393	-	MAS BT 45 DEG
	4003TRKC	M16-2	45	2.36	0.588	1.376	1.102	0.393	0.197	MAS BT 45 DEG
	4004TRK	M16-2	60	2.36	0.588	1.376	1.102	0.393	-	MAS BT 60 DEG
	4004TRKC	M16-2	60	2.36	0.588	1.376	1.102	0.393	0.243	MAS BT 60 DEG
	4009MTRK	M16-2	45	2.31	0.588	1.264	0.99	0.393	-	-
	4009MTRKC	M16-2	45	2.31	0.588	1.264	0.99	0.393	0.197"	-
	MZ40TRK	M16-2	45	1.85	0.74	0.752	0.552	0.49	0.281	FADAL BT40 (Thin Flange)
	F40TRK	M16-2	45	1.85	0.74	0.752	0.552	0.49	-	FADAL BT40
	4020TRK	M16-2	15	2.26	0.748	1.142	0.905	0.55	0.276	-
50 Taper	5002TRK	M24-3	90	3.34	0.904	1.77	1.378	0.667	-	MAS BT 90 DEG
	5003TRK	M24-3	45	3.34	0.904	1.77	1.378	0.667	-	MAS BT 45 DEG
	5003TRKC	M24-3	45	3.34	0.904	1.77	1.378	0.667	0.25	MAS BT 45 DEG
	5004TRK	M24-3	60	3.34	0.904	1.77	1.378	0.667	-	MAS BT 60 DEG



EVOLUTION LINE ANGLE HEADS

- 90 Degree and 180 degree adjustable
 - Automatic tool change
 - Manual heads
- Double output spindles available
 - Heavy duty steel bodies or lightweight aluminum
- Modular design for easy application retool

EVOLUTION LINE

The Evolution line of Parlec by Gerardi angle head has been designed from a technical base derived from 40 years experience of solving thousands of production problems, finding optimum solutions and always guaranteeing the highest product quality. Over 30 standard angle head types are now offered, designed, built and distributed in more than 50 countries the worldwide by Gerardi S.p.A., and available with a range of options to complete their application and performance potentials.

Technical features

1. Minimum thermal expansion and high corrosion resistant treated steel body
2. Modularity: main shaft with interchangeable Drive Taper (Double contact) allows an EVOLUTION angle head to be used on other machining centers with different spindle types and sizes. It is also possible to exchange the anti-rotation (arrester) sub-assembly and the input drive taper with no effect on rigidity or accuracy.
3. All spindles are supported by pairs of preloaded angular contact ball bearings with ABEC 7/9 precision and long life lubrication.
4. Made with Gleason ground spiral bevel gears for optimization in torque availability.
5. More than 42 angle head types available.
6. Among the new range of angle head types the Slim series has reduced weights and overall dimensions with a minimum diameter of 35 mm.
7. Up to 150 psi (10 bar) coolant through the pin (Incl.) in the standard heads. Options include feeding coolant at 150 psi (10 bar) through the cutter spindle or at up to 1000 psi (70 bar) through the machine.
8. Designed for superior heat dissipation and for sustained periods of high speed operations.
9. 100% compatibility with heads installed during the last 40 years (same anti-rotation/arrester pin and stop block dimensions).
10. Parlec by Gerardi Evolution angle heads have been designed and are manufactured in Italy. They are covered by 1 year warranty.

ATC SERIES

from page 142 to 171

ATC angle heads are ideal for CNC machines with automatic tool change and can be automatically transferred from the tool store to the machine spindle and vice-versa.

The orientation ring and arrester arm support ring are both 360° adjustable to allow the best angular orientation. On FMU heads, the cutter spindle housing can be adjusted at $\pm 90^\circ$.

If an ATC angle head is not placed into the machine spindle, a locking system prevents shank rotation relative to the head body.



MTC SERIES

from page 172 to 178

This range of angle heads is for conventional machines without automatic tool change. MTC angle heads (Manual Tool Change) are manually mounted on the machine headstock through a flange.

On FMU heads, the cutter spindle housing can be adjusted at 90°.



Evolution Angle Heads

114 Modular without Compromises

ONE HEAD FOR MANY MACHINES

Interchangeable drive tapers to suit any machine spindle!



A CHOICE OF MODULAR
INTERCHANGEABLE
ARRESTER PINS

The unique Gerardi taper and
face location ensures rigidity
and accuracy!



QUICKEST RETURN ON YOUR INVESTMENT!

Evolution Angle Heads

Modular without Compromises

115

THE SAME MACHINE WITH MANY HEADS

A system that reduces inventory costs!



BE READY FOR TOMORROW WITH THE HEAD YOU BUY TODAY!

Evolution Angle Heads

116

ATC SERIES *EVOLUTION LINE*

AUTOMATIC TOOL CHANGE

DESIGN

The Compact design, along with mentioned specifications, allows for high performance speeds, and long tool life.

Case hardened and ground shank and shaft

Modular antirotation group

Graduated retaining ring

Output

- ER collet (standard)
- Weldon
- Shell mill holder
- Special

BEARINGS

Angular contact preloaded ball bearings of precision class ABEC 7/9

GEARS

Gleason ground spiral bevel gears maximum performance and minimum vibration

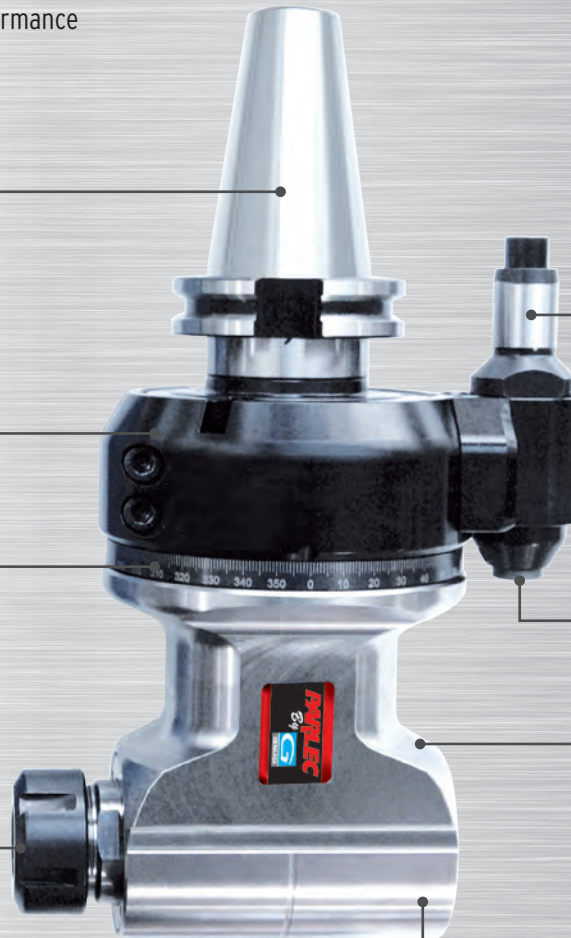


Positioning pin with automatic release

Standard 150Psi (10 bar) coolant through the pin

Treated steel head body with 360° position and internal air pressure, maximum rigidity and corrosion resistant. Minimum thermal expansion

Precision/lapped surface for accurate alignment



STOP BLOCK

with case hardened bushing and gasket



MTC SERIES *EVOLUTION LINE*

MANUAL TOOL CHANGE

This range of angle heads is for conventional machines without automatic tool change. MTC angle heads (Manual Tool Change) are manually mounted on the machine headstock through a flange.

DESIGN

The Compact design, along with mentioned specifications, allows: highest performances, high speeds, long tool life

Case hardened and ground shank and shaft

Graduated retaining ring

Universal flange

Output:

- ER collet (standard)
- Weldon
- Shell mill holder
- Special

Treated steel body with 360° position and internal air pressure, maximum rigidity and corrosion resistant. Minimum thermal expansion

BEARINGS

Angular contact preloaded ball bearings of precision class ABEC7/9

GEARS

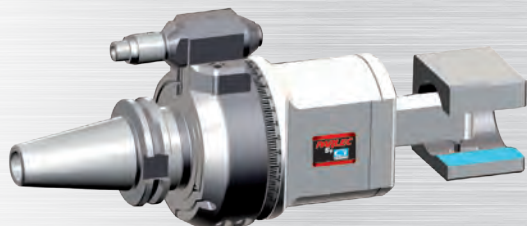
Gleason ground spiral bevel gears maximum performances and minimum vibration



Evolution Angle Heads


ATC SERIES EVOLUTION LINE

AUTOMATIC TOOL CHANGE



SLIM Series

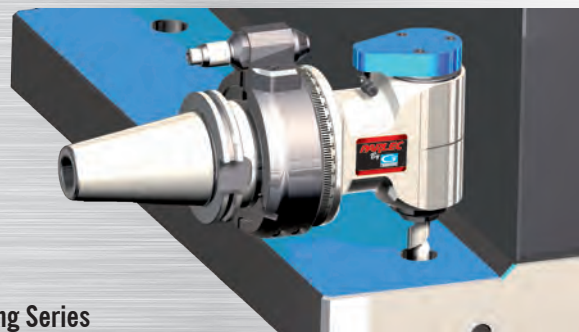
Ideal for micromachining in narrow spaces.

	35 @ 3 MM tool shank - 39 @ 4 MM tool shank		
Application	1:1	8,000 RPM	
Projection	225-260 MM		
Coolant	External piping through the pin		




Milling Series

Ideal for milling, drilling, tapping at 90.



Milling Series with Coolant Option


With coolant input from positioning pin and output through the tool.

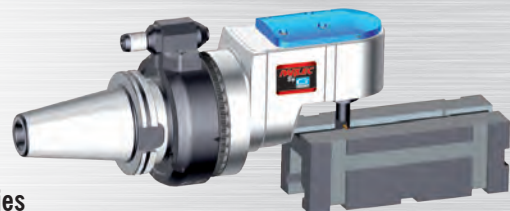
	94 @ 10 MM tool shank - 187 @ 40 taper output		
Application	1:1	2,500-10,000 RPM	Optional dual output spindles available
Projection	150-275 MM		
Coolant	External piping through the pin Optional through tool piped through the pin		



Long Series


Ideal for machining at extreme positions.

	68 @ 7 MM tool shank - 94 @ 10 MM tool shank		
Application	1:1	10,000 RPM	Opt. dual output spindles available
Projection	150-250 MM		
Coolant	External piping through the pin Optional through tool piped through the pin		



Offset Series


Ideal for machining in narrow spaces with coolant input directly from machine spindle and output through the tool at 1,000 psi.

	73 @ 10 MM tool diameter		
Application	1:1	3,500 - 6,000 RPM	
Projection	185-230 MM		
Coolant	1,000 psi through spindle coolant		



Angular Series

Adjustable output at $\pm 90^\circ$ for angular drilling, milling and tapping.

	Varies based on set angle		
Application	1:1	8,000 RPM	
Projection	225-260 MM		
Coolant	External piping through the pin		

Evolution Angle Heads

INTERNAL COOLANT OPTION ATC SERIES



F90-16

(Example shown here)

Standard 150 psi (10 bar) coolant through the positioning pin. Coolant piping can be added to direct the coolant towards the cutting edge. In addition piping can be added for adding low air pressure to keep residual coolant from entering gear box.



F90-16C 150 psi (10bar)

(Example shown here)

Coolant through the positioning pin and the tool, by rotating coolant seal distributor. All plumbing is supplied for customer application assembly.



FR90-16S 1000 psi (70bar)

(Example shown here)

COOLANT SYSTEM FROM MACHINE

The offset design of the FR90 angle head series utilizes high pressure seals which allows through the spindle coolant up to 1000 psi (70bar).

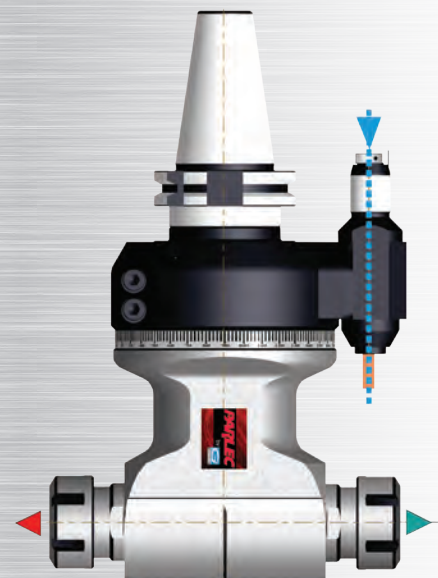
DOUBLE OUTPUT OPTION ATC SERIES



F90-16SD

(Example shown here)

All double output heads one collet chuck with turn with the machine spindle and one will turn opposite.



Evolution Angle Heads

120 8,000 RPM Automatic Tool Change Light Series

ATC SERIES *EVOLUTION LINE* NEW LIGHT SERIES

DESIGN

Aluminum body design, ideal for small size machine tools. Best price to quality ratio angle head.

Case hardened and ground shank

Conical positioning pin with automatic release

Graduated retaining ring

Standard 150 psi (10 bar) coolant through the pin

Output

ER collet (standard)

Aluminum body with 360° position and optional internal air pressure, maximum rigidity and corrosion resistant.
Minimum thermal expansion

BEARINGS

Angular contact preloaded ball bearings of precision class ABEC 7/9



STOP BLOCK

with case hardened with gasket



GEARS

Gleason ground spiral bevel gears maximum performances and minimum vibration



Evolution Angle Heads

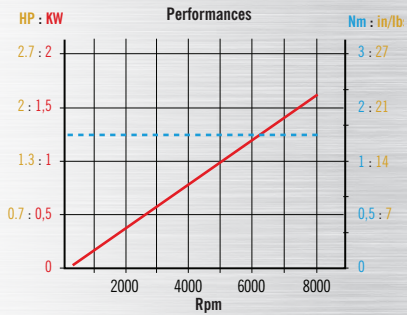
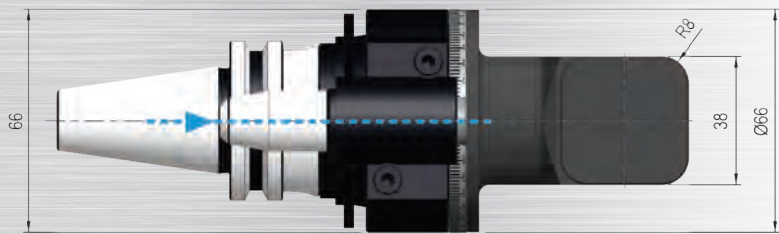
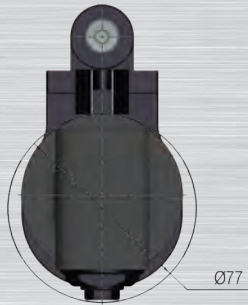
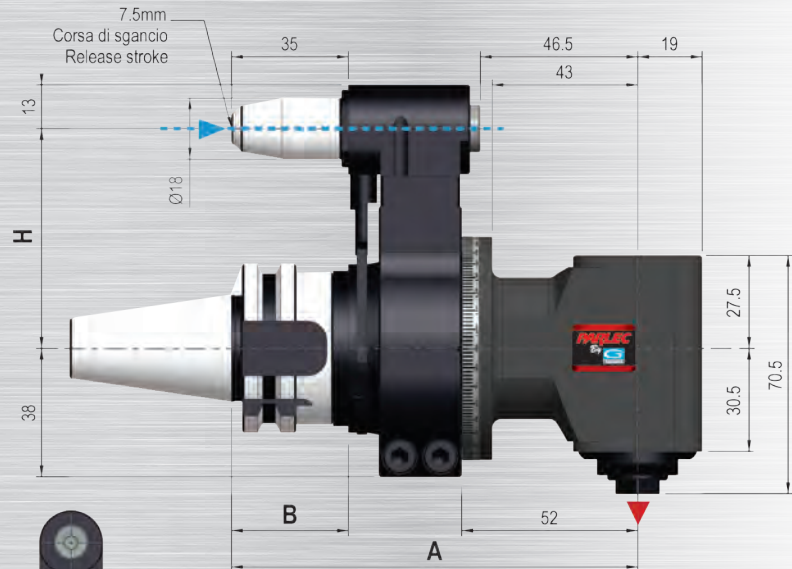
8,000 RPM Automatic Tool Change Light Series

121

FL90-7

Anti-Rotation Interchangeability: TYPE 1 (See page 166)

Option type 2 and 3 anti-rotation available.



Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER11	1-7 mm	1:1	8,000	27 lbs (120 N)	42.2 in/lbs (5 Nm)	Positioning Pin	Opposite Spindle

Description	Shank	A	B	H	H Options	Weight	Spares Included
FL90-7-C40	CAT 40	4.71 (120)	1.38 (35)	2.559 (65)	H=3.149 (80)	4.62 lbs (2.10 kg)	Stop Block Wrenches Grease Instructions
FL90-7-B40	BT 40	4.71 (120)	1.38 (35)	2.559 (65)	H=3.149 (80)	4.62 lbs (2.10 kg)	
FL90-7-C50	CAT 50	4.71 (120)	1.38 (35)	3.149 (80)	H=4.330 (110)	5.50 lbs (2.50 kg)	
FL90-7-H63	HSK63A	5.08 (129)	1.73 (44)	2.599 (65)	H=3.149 (80)		
FL90-7-H100	HSK100A	5.08 (129)	1.73 (44)	3.149 (80)	H=4.330 (110)		

Other Shank Options available: BT30, C5, C6, C8 (ISO 26623) and KM 63. Order ER11 Collets separately. See pages 55-61.

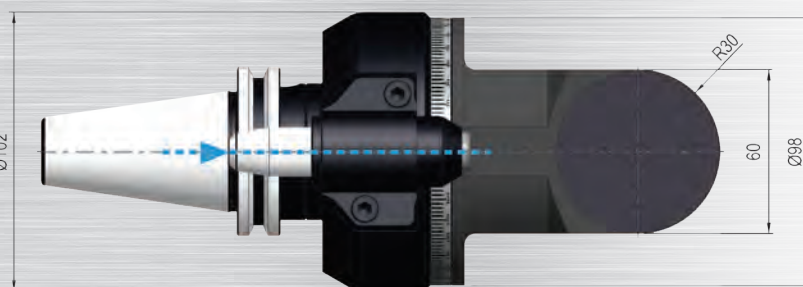
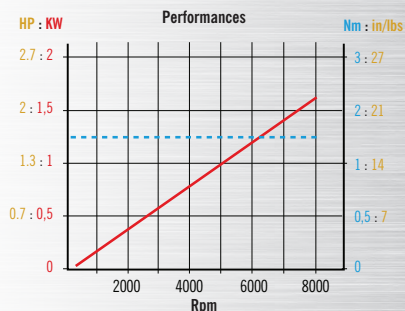
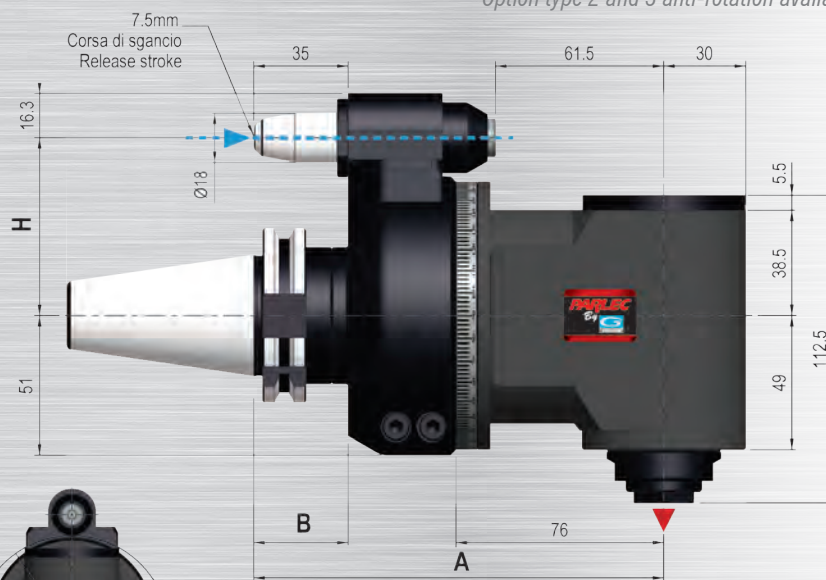
Evolution Angle Heads

122 8,000 RPM Automatic Tool Change Light Series

FL90-13

Anti-Rotation Interchangeability: TYPE 1 (See page 166)

Option type 2 and 3 anti-rotation available.



APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER20	1-13 mm	1:1	6,000	78 lbs (350 N)	177 in/lbs (20 Nm)	Positioning Pin	Opposite Spindle

PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares Included
FL90-13-C40	CAT 40	5.91 (150)	1.38 (35)	2.559 (65)	H=3.149 (80)	11 lbs (5 kg)	Stop Block Wrenches Grease Instructions
FL90-13-B40	BT 40	5.91 (150)	1.38 (35)	2.559 (65)	H=3.149 (80)	11 lbs (5 kg)	
FL90-13-C50	CAT 50	5.91 (150)	1.38 (35)	3.149 (80)	H=4.330 (110)	16.5 lbs (7.5 kg)	
FL90-13-H63	HSK63A	6.26 (159)	1.73 (44)	2.599 (65)	H=3.149 (80)		
FL90-13-H100	HSK100A	6.26 (159)	1.81 (46)	3.149 (80)	H=4.330 (110)		

Other Shank Options available: BT30, C5, C6, C8 (ISO 26623) and KM 63. Order ER20 Collets separately. See pages 55-61.

Evolution Angle Heads

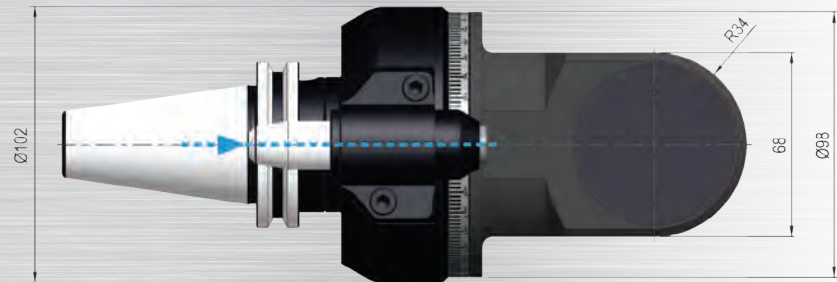
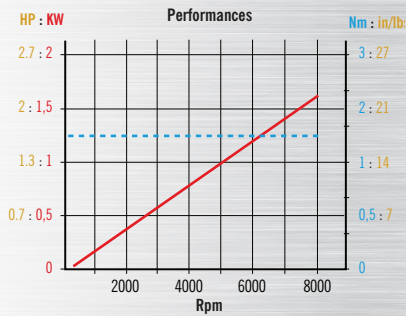
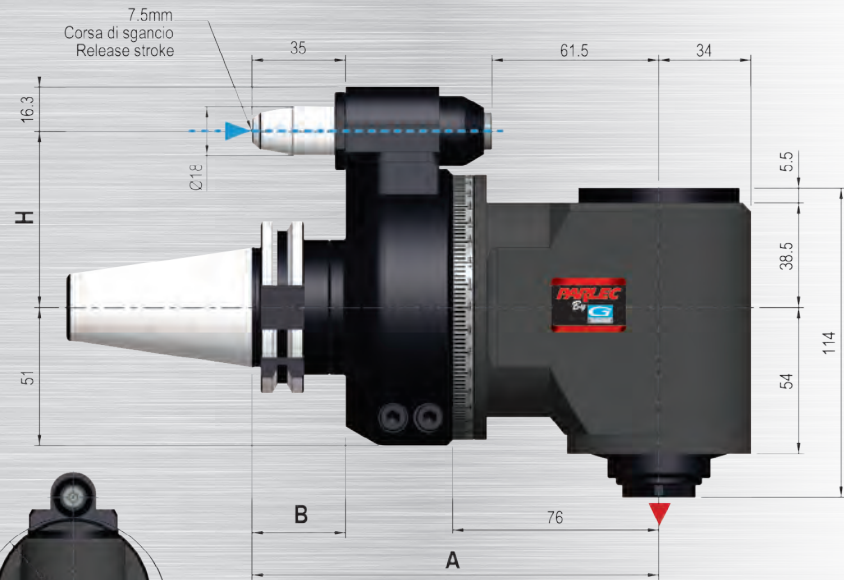
8,000 RPM Automatic Tool Change Light Series

123

FL90-16

Anti-Rotation Interchangeability: TYPE 1 (See page 166)

Option type 2 and 3 anti-rotation available.



APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER25	1-16 mm	1:1	4,000	114 lbs (510 N)	230 in/lbs (26 Nm)	Positioning Pin	Opposite Spindle

PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares Included
FL90-16-C40	CAT 40	5.91 (150)	1.38 (35)	2.559 (65)	H=3.149 (80)	11 lbs (5 kg)	Stop Block Wrenches Grease Instructions
FL90-16-B40	BT 40	6.22 (158)	1.77 (45)	2.559 (65)	H=3.149 (80)	11 lbs (5 kg)	
FL90-16-C50	CAT 50	5.91 (150)	1.38 (35)	3.149 (80)	H=4.330 (110)	16.5 lbs (7.5 kg)	
FL90-16-H63	HSK63A	6.65 (158)	1.73 (44)	2.599 (65)	H=3.149 (80)		
FL90-16-H100	HSK100A	6.65 (158)	1.81 (46)	3.149 (80)	H=4.330 (110)		

Other Shank Options available: BT30, C5, C6, C8 (ISO 26623) and KM 63. Order ER25 Collets separately. See pages 55-61.

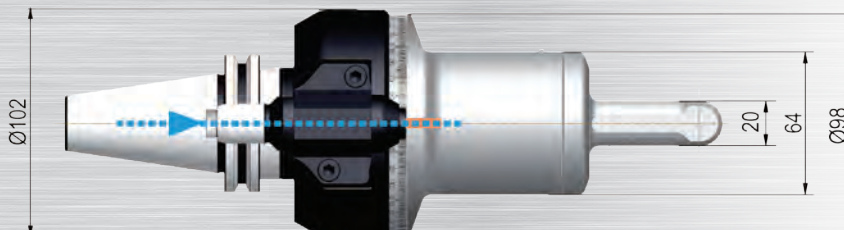
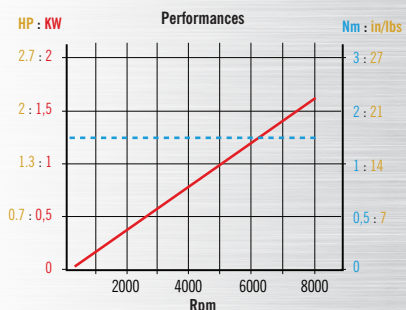
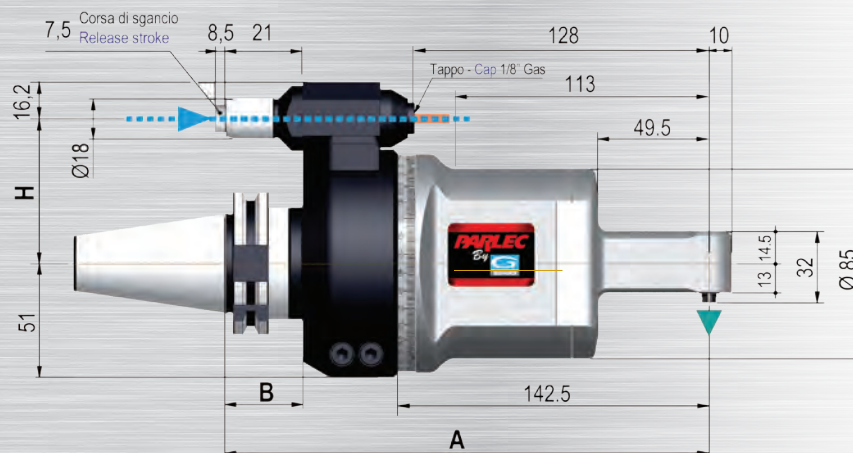
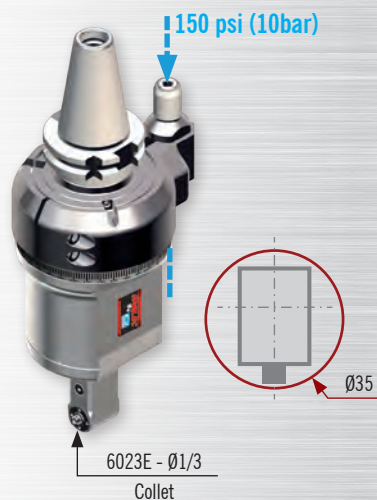
Evolution Angle Heads

124 8,000 RPM Automatic Tool Change Slim Series

FS90-3

Anti-Rotation Interchangeability: TYPE 1 (See page 166)

(Option type 2 and 3 anti-rotation available see page 166)



APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
6023E	1-3 mm	1:1	8,000	16 lbs. (70 N)	17.7 in/ lbs. (2 Nm)	Positioning Pin	Same Spindle

Configured for optional internal air pressure

PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
FS90-3-C40	CAT 40	8.60 (218.5)	1.38 (35)	2.559 (65)	H=3.149 (80)	12.1 lbs. (5.5 kg)	Stop Block Wrenches Grease Instructions
FS90-3-B40	BT 40	8.60 (218.5)	1.38 (35)	2.559 (65)	H=3.149 (80)	12.1 lbs. (5.5 kg)	
FS90-3-C50	CAT 50	8.60 (218.5)	1.38 (35)	3.149 (80)	H=4.330 (110)	16.5 lbs. (7.5 kg)	
FS90-3-B50	BT 50	8.91 (226.5)	1.69 (43)	3.149 (80)	H=4.330 (110)	16.5 lbs. (7.5 kg)	
FS90-3-H63	HSK63A	8.87 (225.5)	1.73 (44)	2.559 (65)	H=3.149 (80)	12.1 lbs. (5.5 kg)	
FS90-3-H100	HSK100A	8.87 (225.5)	1.81 (46)	3.149 (80)	-	16.5 lbs. (7.5 kg)	

Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63. Order 6023E Collets separately. See pages 55-61.

Evolution Angle Heads

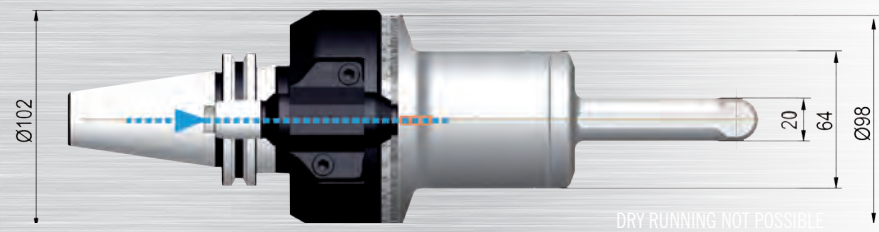
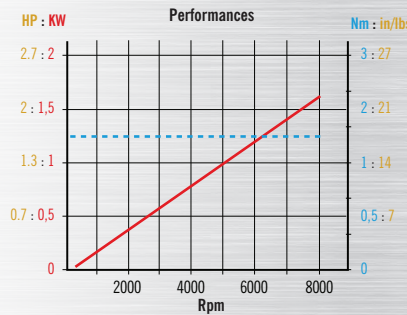
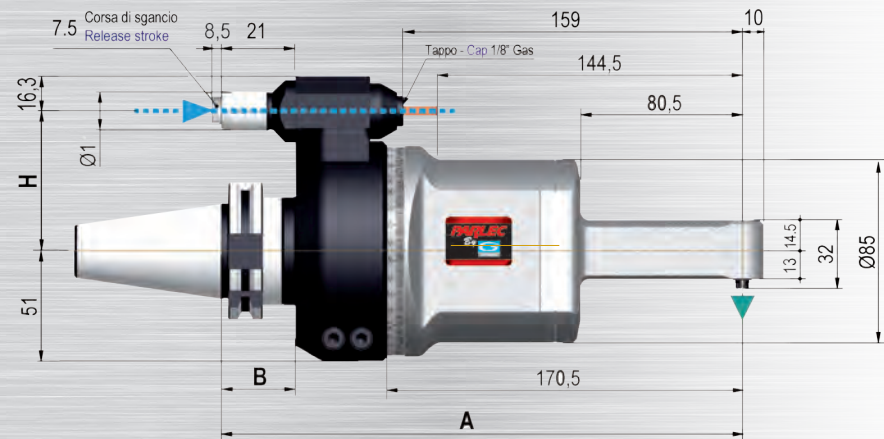
8,000 RPM Automatic Tool Change Light Series

125

FS90-3L

Anti-Rotation Interchangeability: TYPE 1 (See page 166)

(Option type 2 and 3 anti-rotation available see page 166)



APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
6023E	1-3 mm	1:1	8,000	16 lbs. (70 N)	17.7 in/ lbs. (2 Nm)	Positioning Pin	Same Spindle
<i>Configured for optional internal air pressure</i>							

PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
FS90-3L-C40	CAT 40	10.11 (257)	1.38 (35)	2.559 (65)	H=3.149 (80)	14.1 lbs. (6.4 kg)	Stop Block Wrenches Grease Instructions
FS90-3L-B40	BT 40	10.11 (257)	1.38 (35)	2.559 (65)	H=3.149 (80)	14.1 lbs. (6.4 kg)	
FS90-3L-C50	CAT 50	10.11 (257)	1.38 (35)	3.149 (80)	H=4.330 (110)	19 lbs. (8.6 kg)	
FS90-3L-B50	BT 50	10.43 (265)	1.69 (43)	3.149 (80)	H=4.330 (110)	19 lbs. (8.6 kg)	
FS90-3L-H63	HSK63A	10.10 (255)	1.73 (44)	2.559 (65)	H=3.149 (80)	14.1 lbs. (6.4 kg)	
FS90-3L-H100	HSK100A	10.10 (255)	1.81 (46)	3.149 (80)	-	19 lbs. (8.6 kg)	

Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63. Order 6023E Collets separately. See pages 55-61.

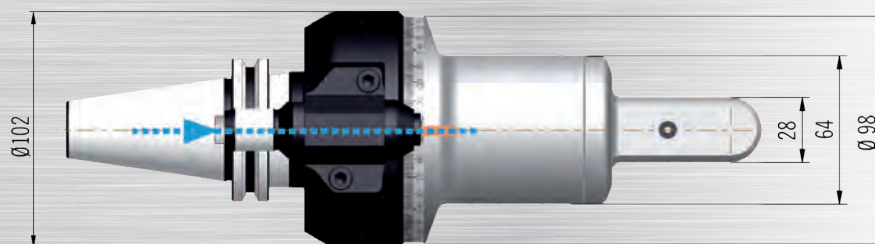
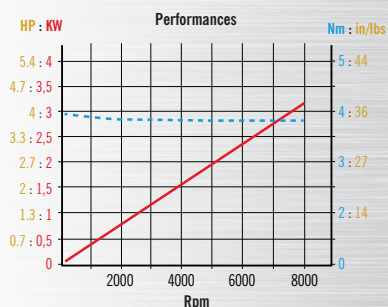
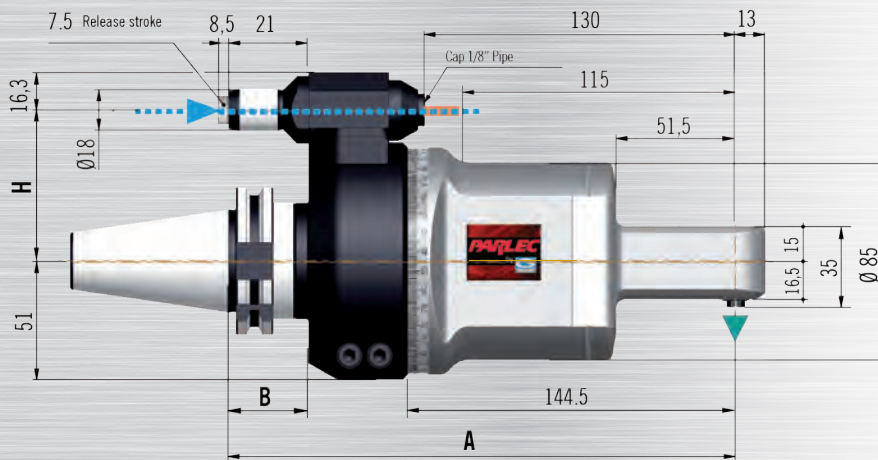
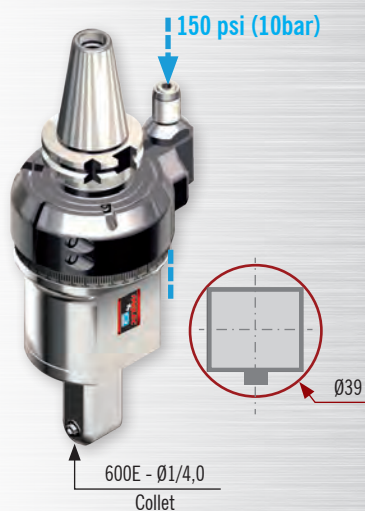
Evolution Angle Heads

126 8,000 RPM Automatic Tool Change Slim Series

FS90-4

Anti-Rotation Interchangeability: TYPE 1 (See page 166)

(Option type 2 and 3 anti-rotation available see page 166)



APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
600E	1-4 mm	1:1	8,000	27 lbs. (120 N)	31 in/ lbs. (3.5 Nm)	Positioning Pin	Opposite Spindle
<i>Configured for optional internal air pressure</i>							

PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
FS90-4-C40	CAT 40	8.60 (218.5)	1.38 (35)	2.559 (65)	H=3.149 (80)	12.1 lbs. (5.5 kg)	Stop Block Wrenches Grease Instructions
FS90-4-B40	BT 40	8.60 (218.5)	1.38 (35)	2.559 (65)	H=3.149 (80)	12.1 lbs. (5.5 kg)	
FS90-4-C50	CAT 50	8.60 (218.5)	1.38 (35)	3.149 (80)	H=4.330 (110)	16.5 lbs. (7.5 kg)	
FS90-4-B50	BT 50	8.91 (226.5)	1.69 (43)	3.149 (80)	H=4.330 (110)	16.5 lbs. (7.5 kg)	
FS90-4-H63	HSK63A	8.76 (222.5)	1.73 (44)	2.559 (65)	H=3.149 (80)	12.1 lbs. (5.5 kg)	
FS90-4-H100	HSK100A	8.76 (222.5)	1.81 (46)	3.149 (80)	-	16.5 lbs. (7.5 kg)	

Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63. Order 600E Collets separately. See pages 55-61.

Evolution Angle Heads

8,000 RPM Automatic Tool Change Slim Series

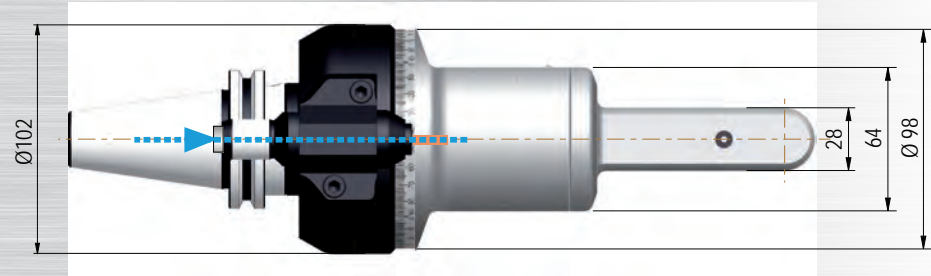
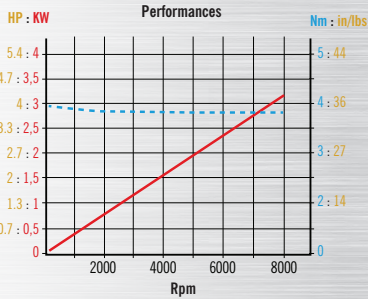
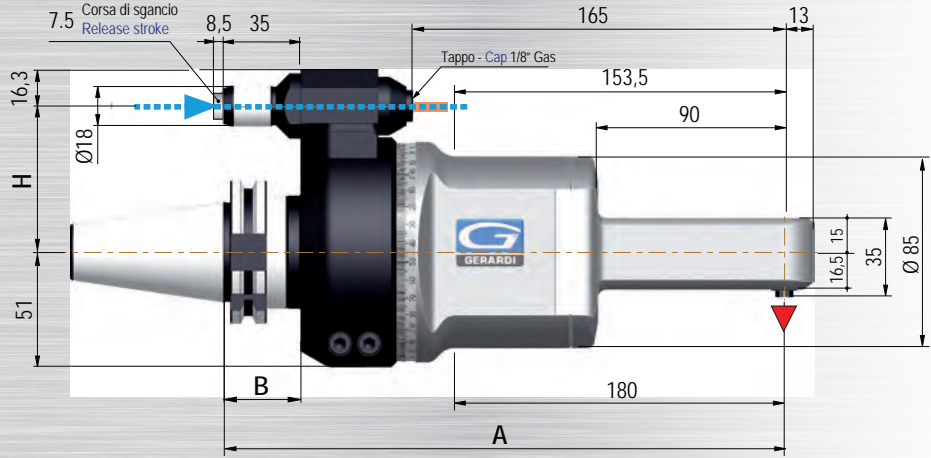
127

FS90-4L

Anti-Rotation Interchangeability: TYPE 1 (See page 166)

(Option type 2 and 3 anti-rotation available see page 166)

150 psi (10bar)



DRY RUNNING NOT POSSIBLE

APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
600E	1-4 mm	1:1	8,000	27 lbs. (120 N)	31 in/ lbs. (3.5 Nm)	Positioning Pin	Opposite Spindle
<i>Configured for optional internal air pressure</i>							

PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
FS90-4L-C40	CAT 40	10.12 (257)	1.38 (35)	2.559 (65)	H=3.149 (80)	14.9 lbs. (6.8 kg)	Stop Block Wrenches Grease Instructions
FS90-4L-B40	BT 40	10.12 (257)	1.38 (35)	2.559 (65)	H=3.149 (80)	14.9 lbs. (6.8 kg)	
FS90-4L-C50	CAT 50	10.12 (257)	1.38 (35)	3.149 (80)	H=4.330 (110)	19.8 lbs. (9 kg)	
FS90-4L-B50	BT 50	10.43 (265)	1.69 (43)	3.149 (80)	H=4.330 (110)	19.8 lbs. (9 kg)	
FS90-4L-H63	HSK63A	10.27 (261)	1.73 (44)	2.559 (65)	H=3.149 (80)	15 lbs. (6.8 kg)	
FS90-4L-H100	HSK100A	10.27 (261)	1.81 (46)	3.149 (80)	-	19.8 lbs. (9 kg)	

Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63. Order 600E Collets separately. See pages 55-61.

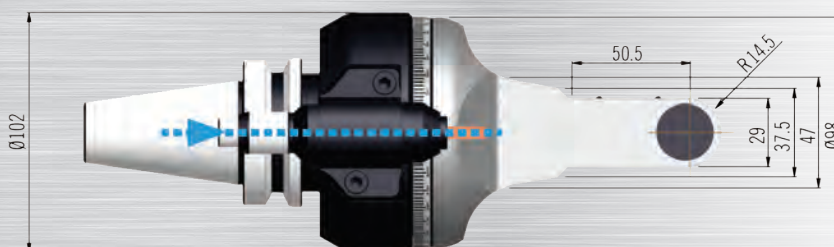
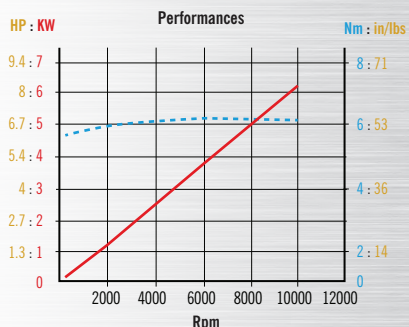
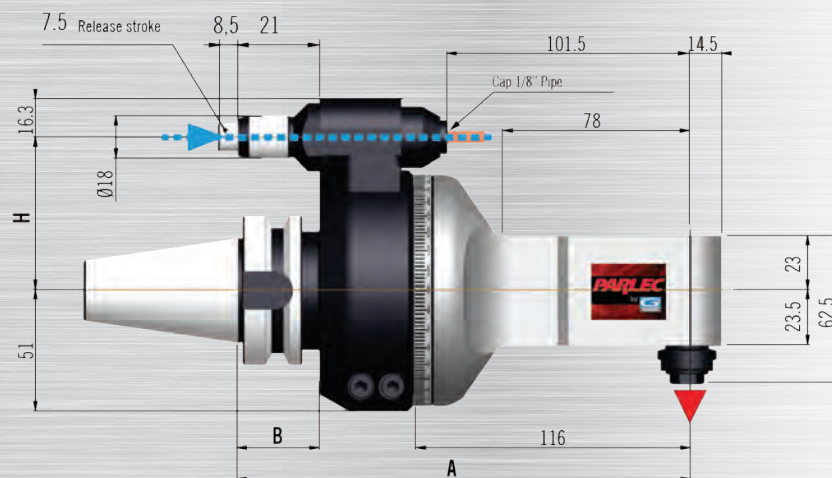
Evolution Angle Heads

128 10,000 RPM Automatic Tool Change High Speed Series

F90-7

Anti-Rotation Interchangeability: TYPE 1 (See page 166)

(Option type 2 and 3 anti-rotation available see page 166)



APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 11	.5-7 mm	1:1	10,000	28 lbs. (127 N)	53 in/ lbs. (6 Nm)	Positioning Pin	Opposite Spindle

See next page for Optional Output Shaft: Double ER. Additional Output Shafts available: Weldon

See next page for Optional coolant: Through Spindle from Pin. Configured for optional internal air pressure

PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
F90-7-C40	CAT 40	8.60 (218.5)	1.38 (35)	2.559 (65)	H=3.149 (80)	11 lbs. (5 kg)	Stop Block Wrenches Grease Instructions
F90-7-B40	BT 40	8.60 (218.5)	1.38 (35)	2.559 (65)	H=3.149 (80)	11 lbs. (5 kg)	
F90-7-C50	CAT 50	8.60 (218.5)	1.38 (35)	3.149 (80)	H=4330 (110)	15.4 lbs. (7 kg)	
F90-7-B50	BT 50	8.19 (226.5)	1.69 (43)	3.149 (80)	H=4330 (110)	15.4 lbs. (7 kg)	
F90-7-H63	HSK63A	7.83 (199)	1.73 (44)	2.559 (65)	H=3.149 (80)	11 lbs. (5 kg)	
F90-7-H100	HSK100A	7.83 (199)	1.81 (46)	3.149 (80)	-	15.4 lbs. (7 kg)	

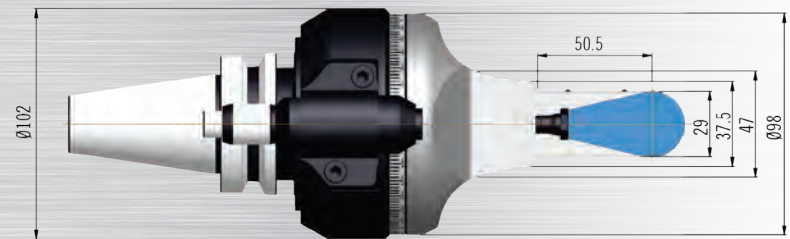
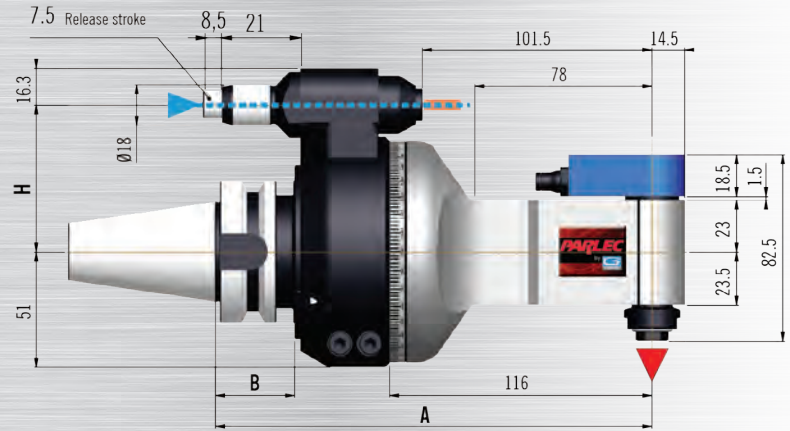
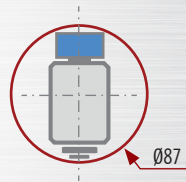
Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63. Order ER11 Collets separately. See pages 55-61.

Evolution Angle Heads

10,000 RPM Automatic Tool Change High Speed Series

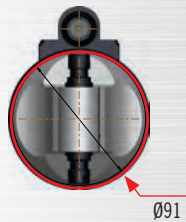
129

F90-7C With optional 150 psi coolant piped though output shaft

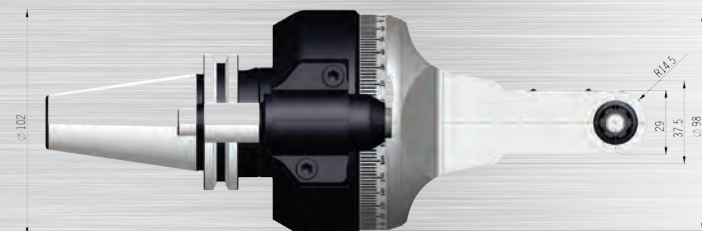
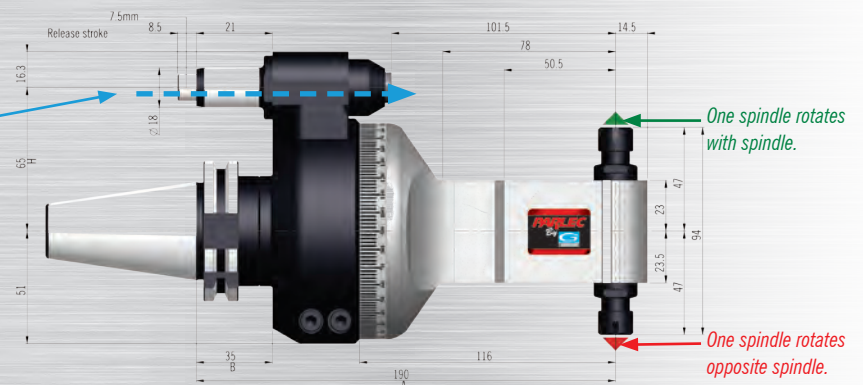


DRY RUNNING NOT POSSIBLE

F90-7D With optional double output



Note: Coolant through Positioning Pin only



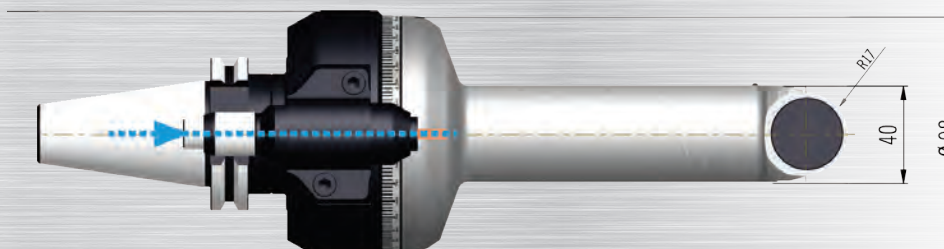
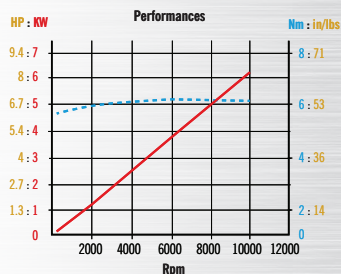
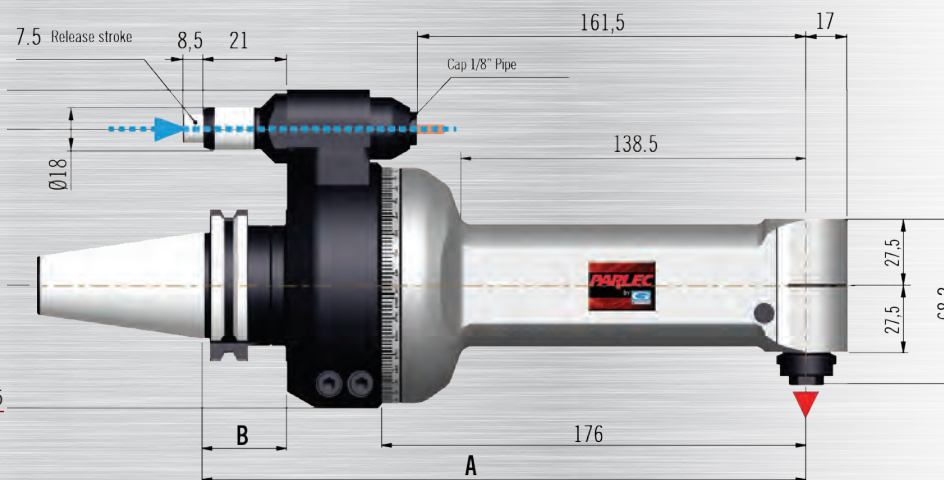
Evolution Angle Heads

130 10,000 RPM Automatic Tool Change Long High Speed Series

F90-7L

Anti-Rotation Interchangeability: TYPE 1 (See page 166)

(Option type 2 and 3 anti-rotation available see page 166)



APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 11	.5-7 mm	1:1	10,000	28 lbs. (127 N)	53 in/ lbs. (6 Nm)	Positioning Pin	Opposite Spindle

See next page for Optional Output Shaft: Double ER. Additional Output Shafts available: Weldon

See next page for Optional coolant: Through Spindle from Pin. Configured for optional internal air pressure

PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
F90-7L-C40	CAT 40	8.60 (218.5)	1.38 (35)	2.559 (65)	H=3.149 (80)	13.8 lbs. (6.3 kg)	Stop Block Wrenches Grease Instructions
F90-7L-B40	BT 40	8.60 (218.5)	1.38 (35)	2.559 (65)	H=3.149 (80)	13.8 lbs. (6.3 kg)	
F90-7L-C50	CAT 50	9.84 (250)	1.38 (35)	3.149 (80)	H=4330 (110)	18.7 lbs. (8.5 kg)	
F90-7L-B50	BT 50	8.91 (226.5)	1.69 (43)	3.149 (80)	H=4330 (110)	18.7 lbs. (8.5 kg)	
F90-7L-H63	HSK63A	10.20 (259)	1.73 (44)	2.559 (65)	H=3.149 (80)	13.8 lbs. (6.3 kg)	
F90-7L-H100	HSK100A	10.20 (259)	1.81 (46)	3.149 (80)	-	18.7 lbs. (8.5 kg)	

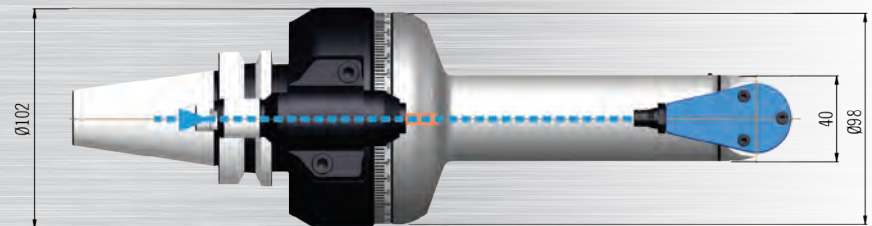
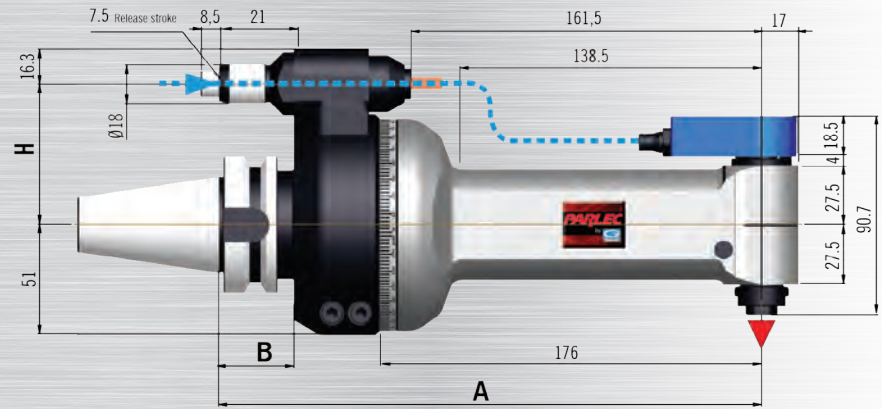
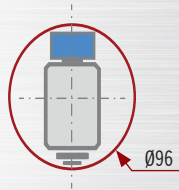
Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63. Order ER11 Collets separately. See pages 55-61.

Evolution Angle Heads

10,000 RPM Automatic Tool Change Long High Speed Series

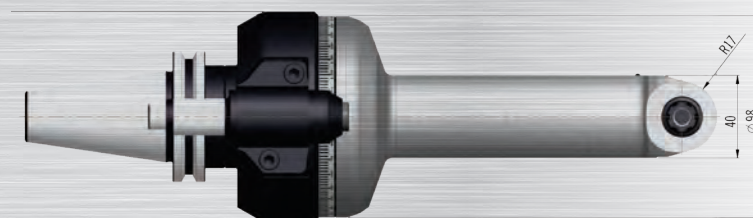
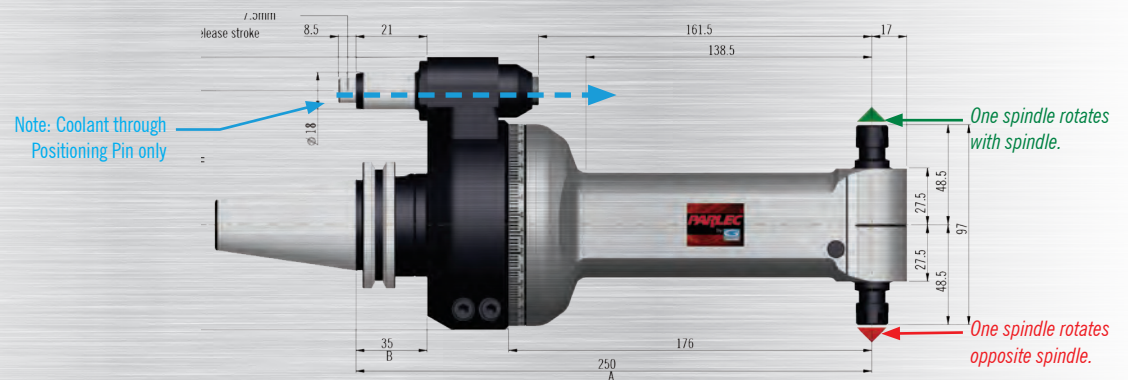
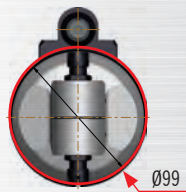
131

F90-7LC With optional 150 psi coolant piped through output shaft



DRY RUNNING NOT POSSIBLE

F90-7LD With optional double output



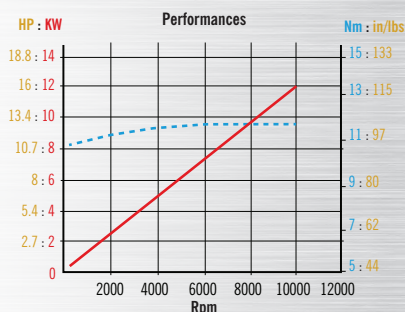
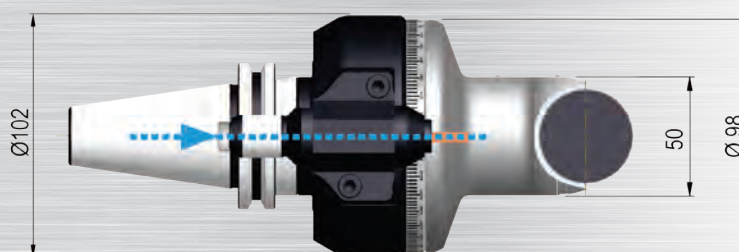
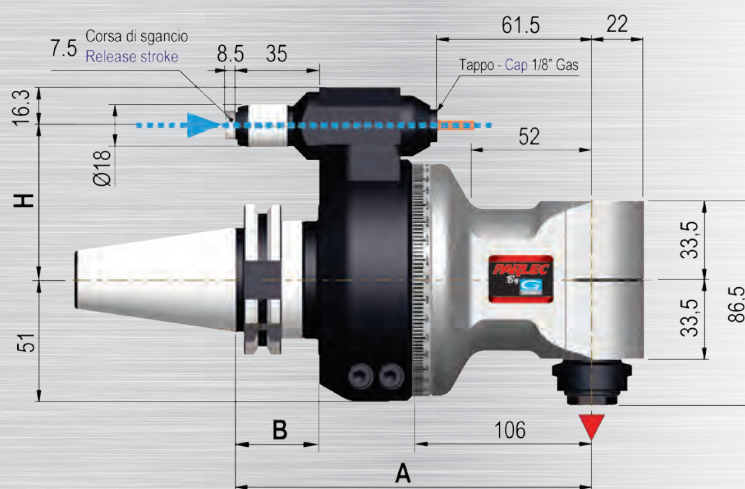
Evolution Angle Heads

132 10,000 RPM Automatic Tool Change High Speed Series

F90-10

Anti-Rotation Interchangeability: TYPE 1 (See page 166)

(Option type 2 and 3 anti-rotation available see page 166)



APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 16	1-10 mm	1:1	10,000	90 lbs. (400 N)	97 in/ lbs. (11 Nm)	Positioning Pin	Opposite Spindle
Optional Output Shaft: Weldon and Double ER, Page 153 Additional Output Shafts available: Weldon, Shell Mill					See next page for Optional coolant: Through Spindle from Pin. Configured for optional internal air pressure		

PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
F90-10-C40	CAT 40	5.90 (150)	1.38 (35)	2.559 (65)	H=3.149 (80)	11.6 lbs. (5.3 kg)	Stop Block Wrenches Grease Instructions
F90-10-B40	BT 40	5.90 (150)	1.38 (35)	2.559 (65)	H=3.149 (80)	11.6 lbs. (5.3 kg)	
F90-10-C50	CAT 50	5.90 (150)	1.38 (35)	3.149 (80)	H=4.330 (110)	16.5 lbs. (7.5 kg)	
F90-10-B50	BT 50	6.22 (158)	1.69 (43)	3.149 (80)	H=4.330 (110)	16.5 lbs. (7.5 kg)	
F90-10-H63	HSK63A	6.26 (159)	1.73 (44)	2.559 (65)	H=3.149 (80)	11.7 lbs. (5.3 kg)	
F90-10-H100	HSK100A	6.26 (159)	1.81 (46)	3.149 (80)	-	16.5 lbs. (7.5 kg)	

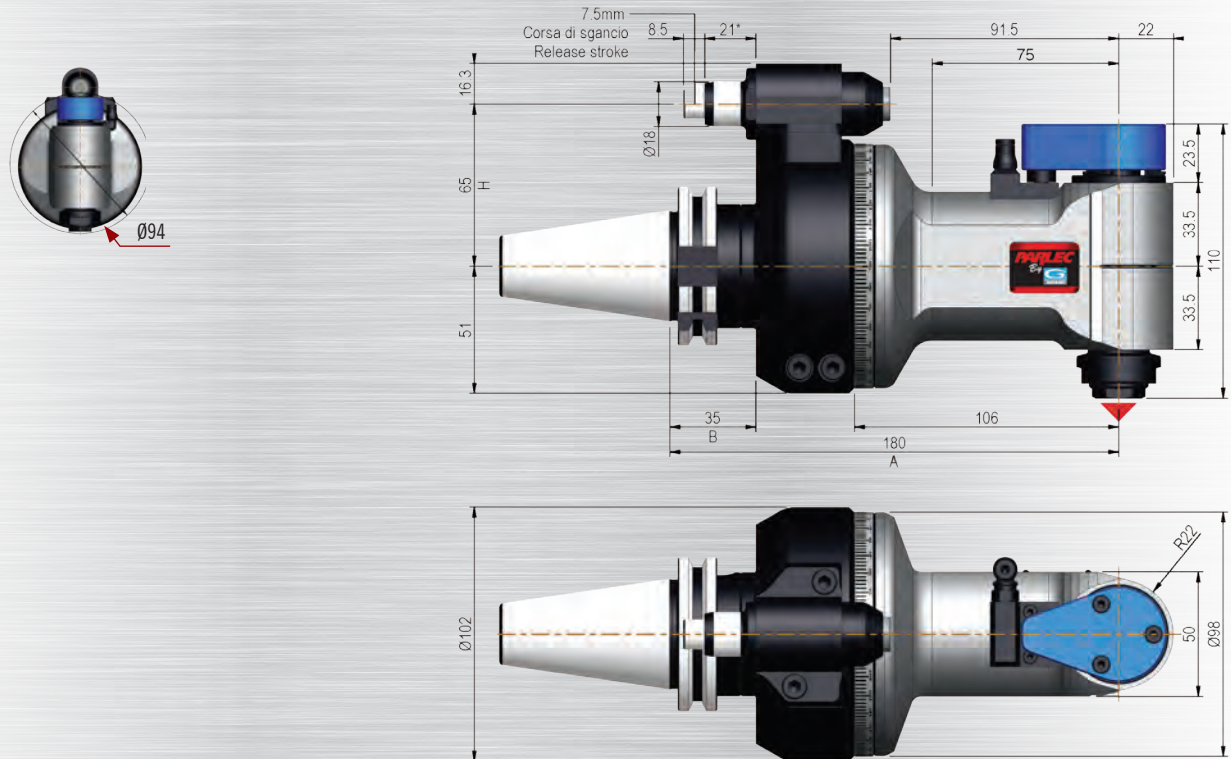
Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63. Order ER16 Collets separately. See pages 55-61.

Evolution Angle Heads

5,000 RPM Automatic Tool Change Coolant High Speed Series

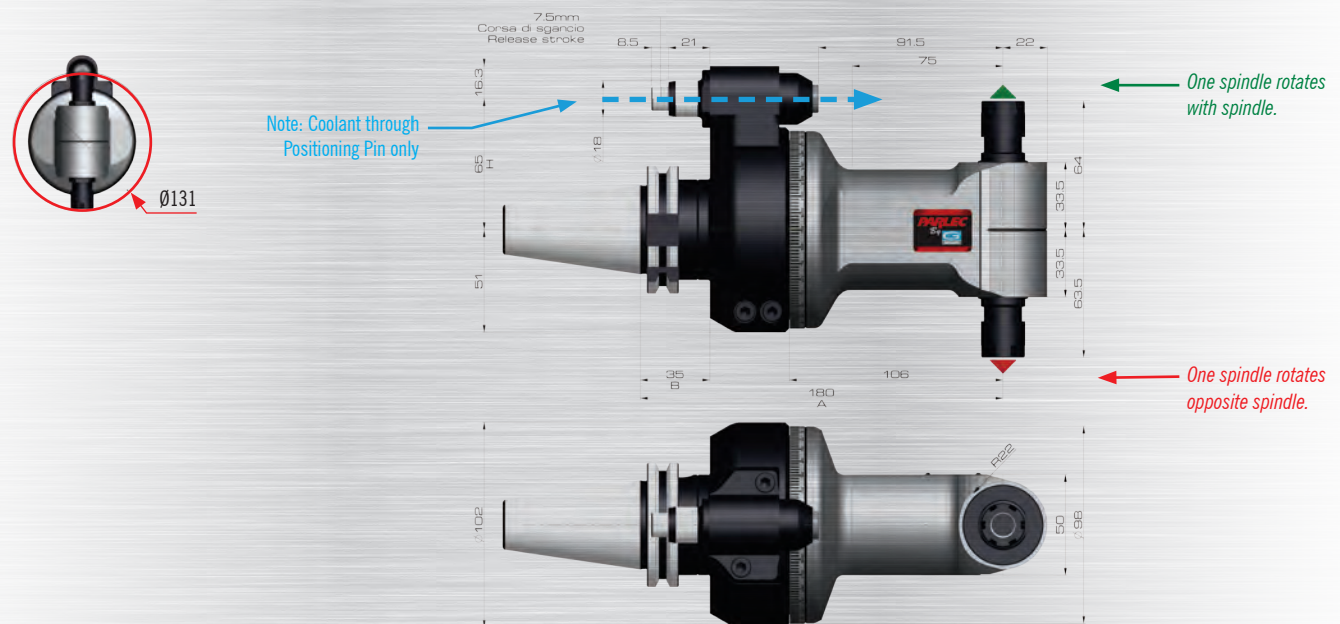
133

F90-10C With optional 150 psi coolant piped though output shaft



DRY RUNNING NOT POSSIBLE

F90-10D With optional double output



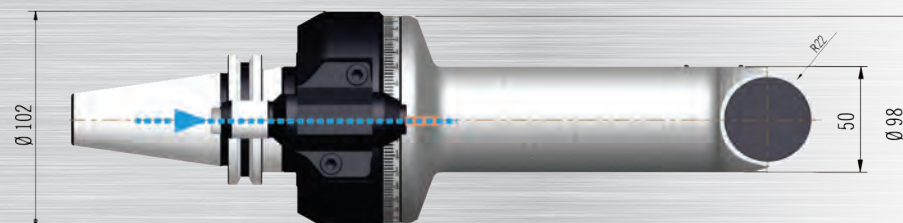
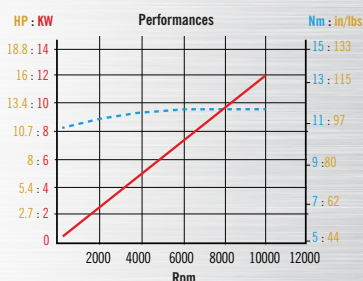
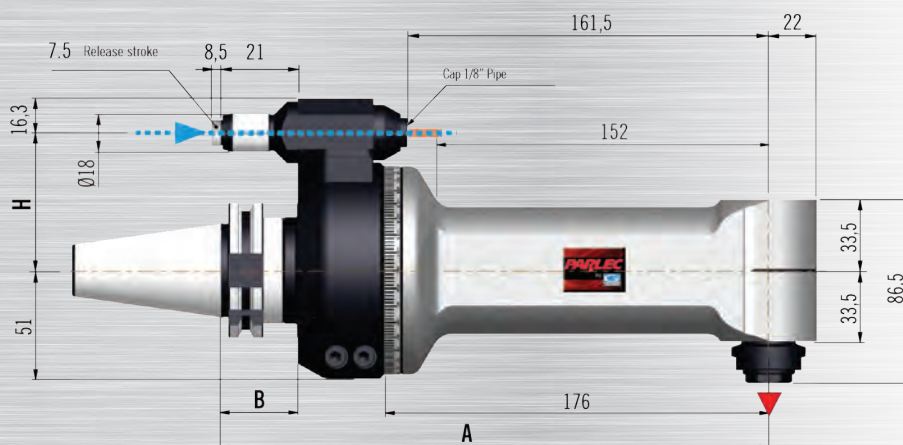
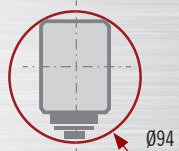
Evolution Angle Heads

134 10,000 RPM Automatic Tool Change Long High Speed Series

F90-10L

Anti-Rotation Interchangeability: TYPE 1 (See page 166)

(Option type 2 and 3 anti-rotation available see page 166)



APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 16	1-10 mm	1:1	10,000	90 lbs. (400 N)	97 in/ lbs. (11 Nm)	Positioning Pin	Opposite Spindle

See next page for Optional Output Shaft: Double ER.
Additional Output Shafts available: Weldon, Shell Mill

See next page for Optional coolant: Through Spindle from Pin.
Configured for optional internal air pressure

PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
F90-10L-C40	CAT 40	9.84 (250)	1.38 (35)	2.559 (65)	H=3.149 (80)	15.2 lbs. (6.9 kg)	Stop Block Wrenches Grease Instructions
F90-10L-B40	BT 40	9.84 (250)	1.38 (35)	2.559 (65)	H=3.149 (80)	15.2 lbs. (6.9 kg)	
F90-10L-C50	CAT 50	9.84 (250)	1.38 (35)	3.149 (80)	H=4.330 (110)	20.2 lbs. (9.2 kg)	
F90-10L-B50	BT 50	9.84 (250)	2.58 (43)	3.149 (80)	H=4.330 (110)	20.2 lbs. (9.2 kg)	
F90-10L-H63	HSK63A	10.20 (259)	1.73 (44)	2.559 (65)	H=3.149 (80)	15.2 lbs. (6.9 kg)	
F90-10L-H100	HSK100A	10.20 (259)	1.81 (46)	3.149 (80)	-	20.2 lbs. (9.2 kg)	

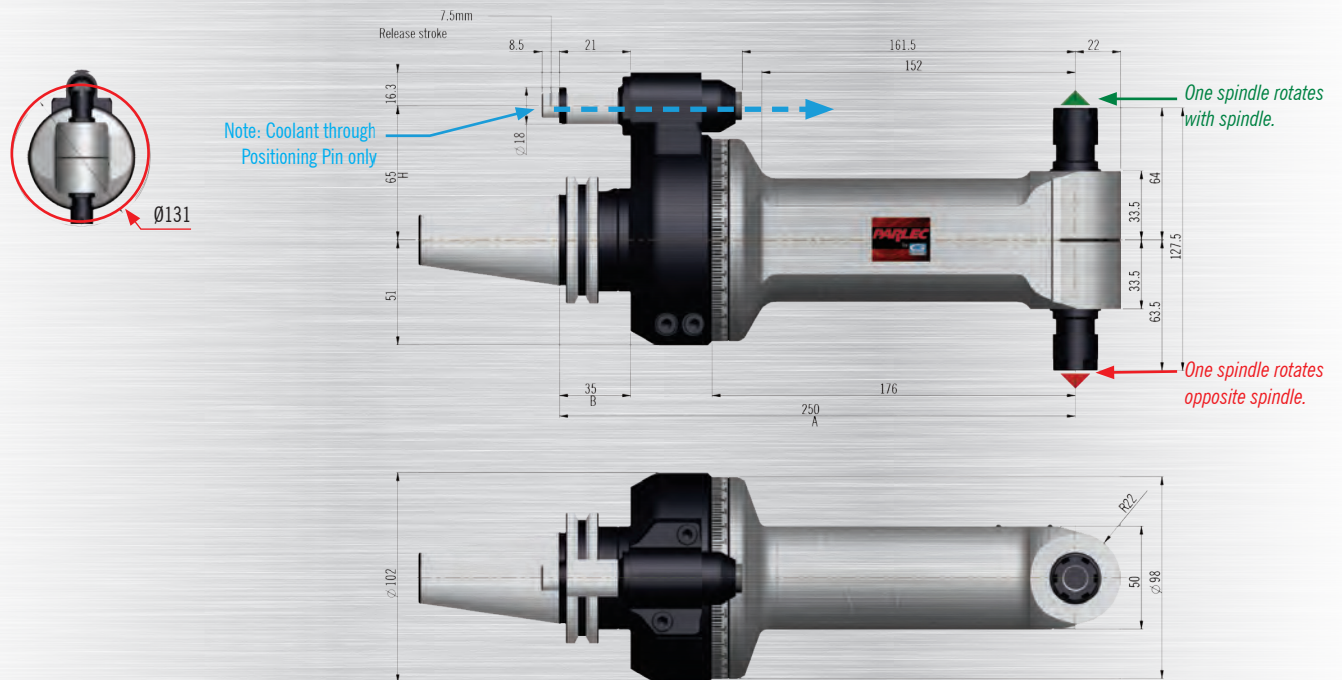
Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63. Order ER16 Collets separately. See pages 55-61.

Evolution Angle Heads

10,000 RPM Automatic Tool Change Long High Speed Series

135

F90-10LD *With optional double output*



Evolution Angle Heads

136 10,000 RPM Automatic Tool Change Long High Speed Series

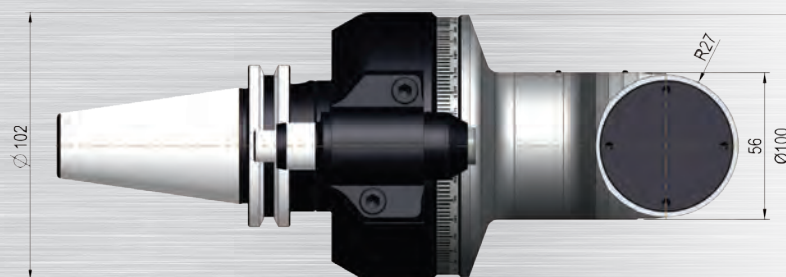
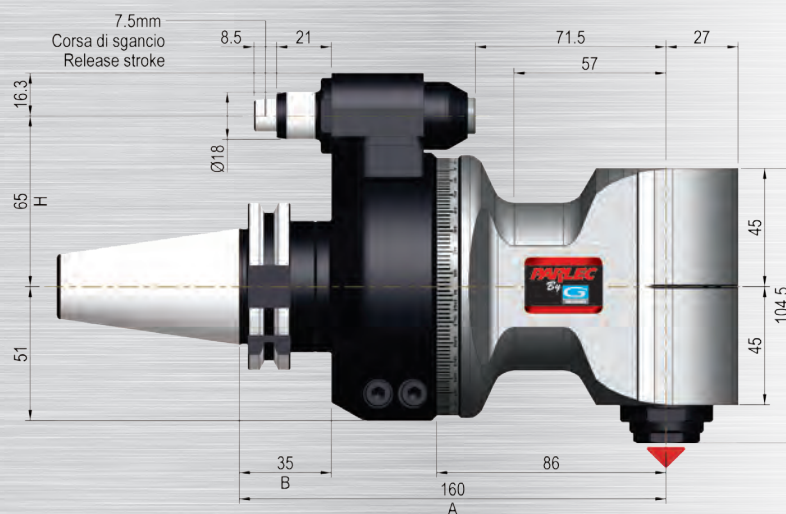
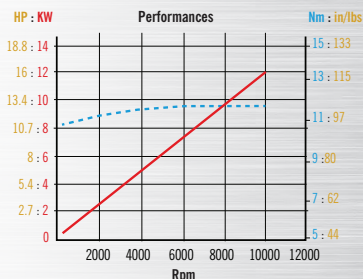
F90-13

Anti-Rotation Interchangeability: TYPE 1 (See page 166)

(Option type 2 and 3 anti-rotation available see page 166)



ER16 Ø1/10
Collet



APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 16	1-10 mm	1:1	10,000	90 lbs. (400 N)	97 in/ lbs. (11 Nm)	Positioning Pin	Opposite Spindle

See next page for Optional Output Shaft: Double ER. Additional Output Shafts available: Weldon, Shell Mill

See next page for Optional coolant: Through Spindle from Pin. Configured for optional internal air pressure

PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
F90-10L-C40	CAT 40	9.84 (250)	1.38 (35)	2.559 (65)	H=3.149 (80)	15.2 lbs. (6.9 kg)	Stop Block Wrenches Grease Instructions
F90-10L-B40	BT 40	9.84 (250)	1.38 (35)	2.559 (65)	H=3.149 (80)	15.2 lbs. (6.9 kg)	
F90-10L-C50	CAT 50	9.84 (250)	1.38 (35)	3.149 (80)	H=4.330 (110)	20.2 lbs. (9.2 kg)	
F90-10L-B50	BT 50	9.84 (250)	1.38 (35)	3.149 (80)	H=4.330 (110)	20.2 lbs. (9.2 kg)	
F90-10L-H63	HSK63A	10.20 (259)	1.73 (44)	2.559 (65)	H=3.149 (80)	15.2 lbs. (6.9 kg)	
F90-10L-H100	HSK100A	10.20 (259)	1.81 (46)	3.149 (80)	-	20.2 lbs. (9.2 kg)	

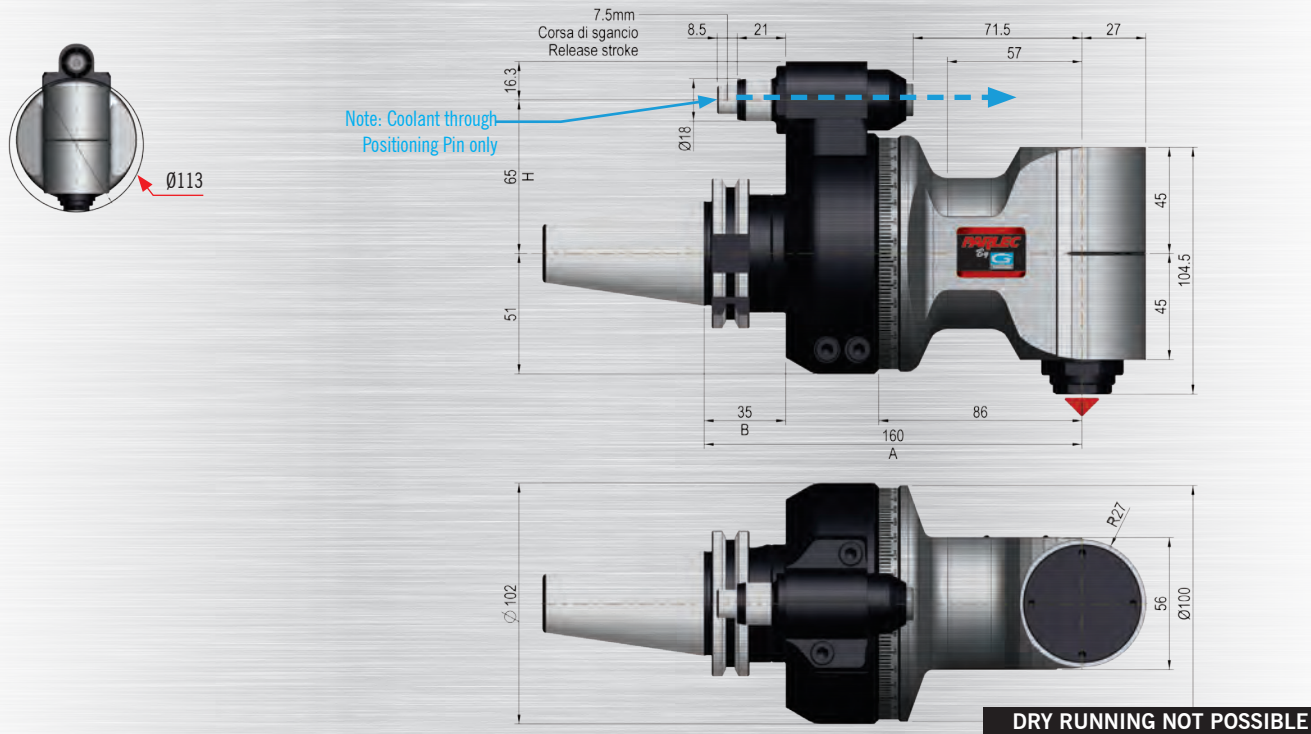
Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63. Order ER16 Collets separately. See pages 55-61.

Evolution Angle Heads

10,000 RPM Automatic Tool Change Long High Speed Series

137

F90-13C *With optional 150 psi coolant piped through output shaft*



F90-13 *With optional double output*

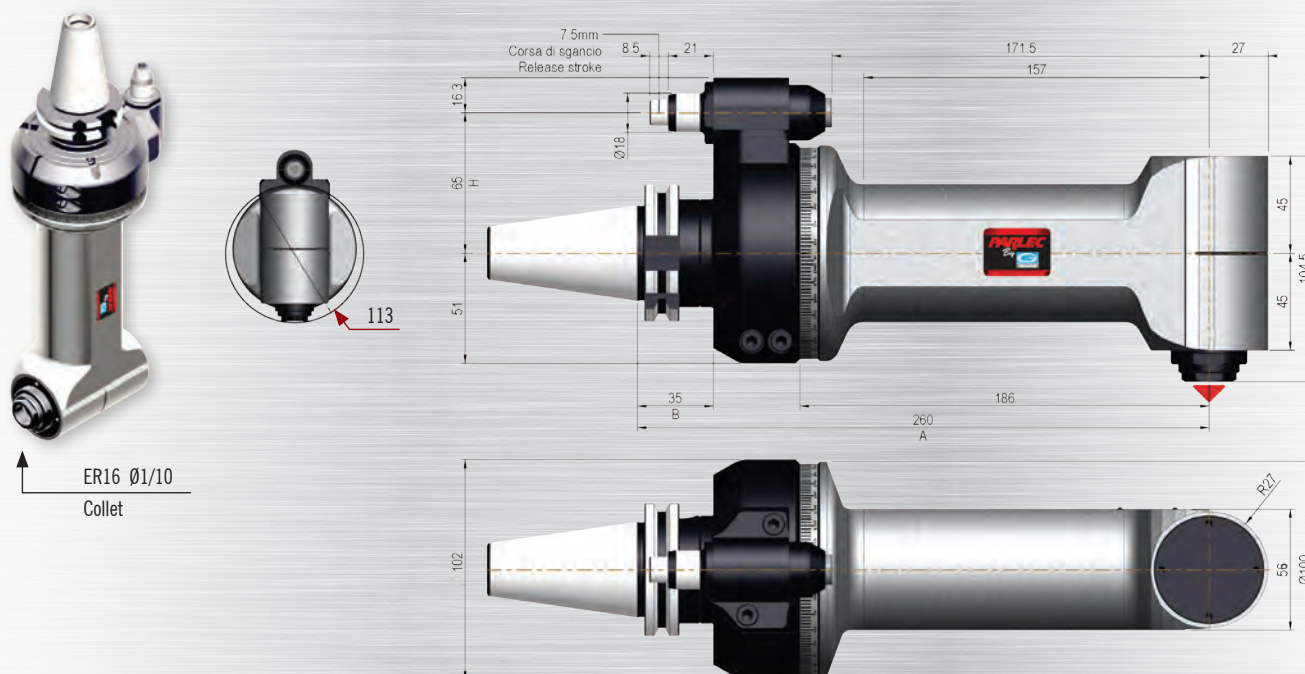
Evolution Angle Heads

138 10,000 RPM Automatic Tool Change Long High Speed Series

F90-13L

Anti-Rotation Interchangeability: TYPE 1 (See page 166)

(Option type 2 and 3 anti-rotation available see page 166)



APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 16	1-10 mm	1:1	10,000	90 lbs. (400 N)	97 in/ lbs. (11 Nm)	Positioning Pin	Opposite Spindle
See next page for Optional Output Shaft: Double ER. Additional Output Shafts available: Weldon, Shell Mill					See next page for Optional coolant: Through Spindle from Pin. Configured for optional internal air pressure		

PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
F90-10L-C40	CAT 40	9.84 (250)	1.38 (35)	2.559 (65)	H=3.149 (80)	15.2 lbs. (6.9 kg)	Stop Block Wrenches Grease Instructions
F90-10L-B40	BT 40	9.84 (250)	1.38 (35)	2.559 (65)	H=3.149 (80)	15.2 lbs. (6.9 kg)	
F90-10L-C50	CAT 50	9.84 (250)	1.38 (35)	3.149 (80)	H=4.330 (110)	20.2 lbs. (9.2 kg)	
F90-10L-B50	BT 50	9.84 (250)	1.38 (35)	3.149 (80)	H=4.330 (110)	20.2 lbs. (9.2 kg)	
F90-10L-H63	HSK63A	10.20 (259)	1.73 (44)	2.559 (65)	H=3.149 (80)	15.2 lbs. (6.9 kg)	
F90-10L-H100	HSK100A	10.20 (259)	1.81 (46)	3.149 (80)	-	20.2 lbs. (9.2 kg)	

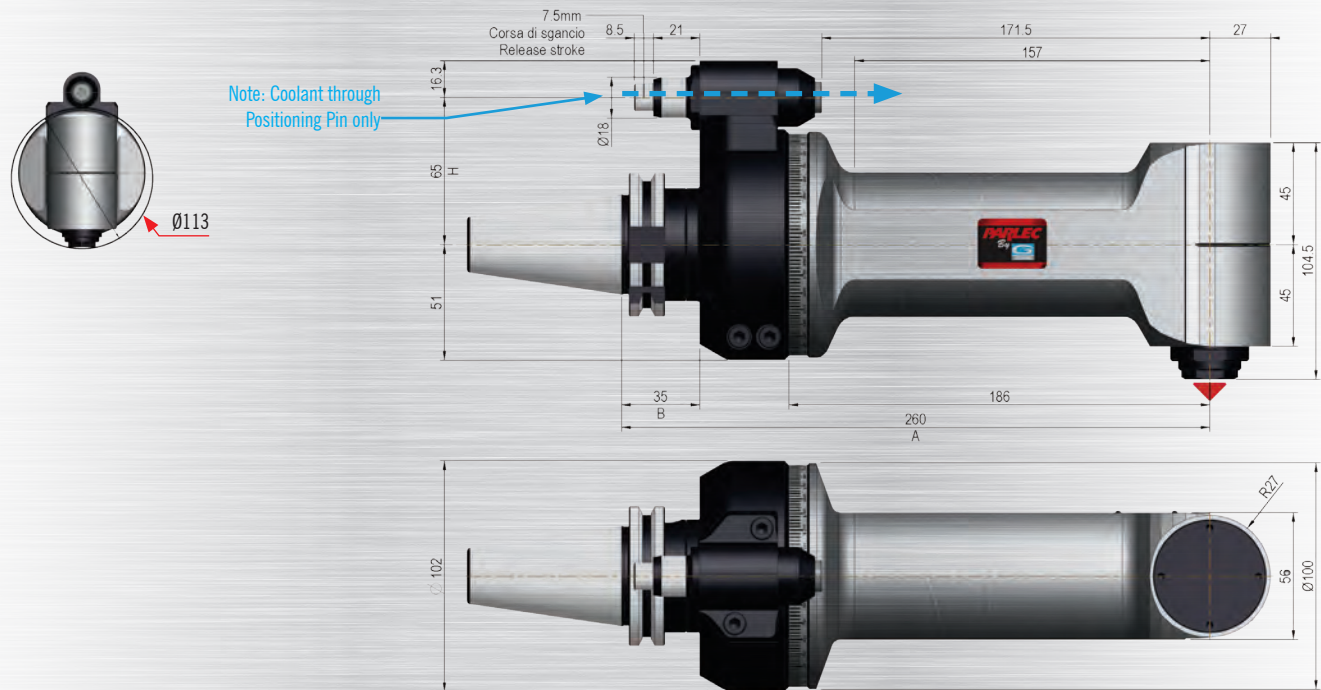
Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63. Order ER16 Collets separately. See pages 55-61.

Evolution Angle Heads

10,000 RPM Automatic Tool Change Long High Speed Series

139

F90-13LC With optional 150 psi coolant piped through output shaft



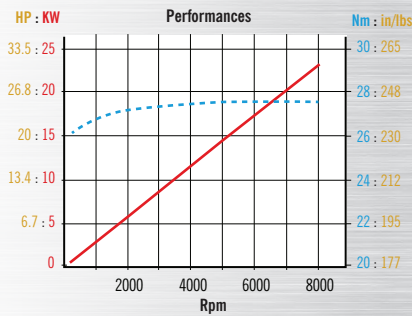
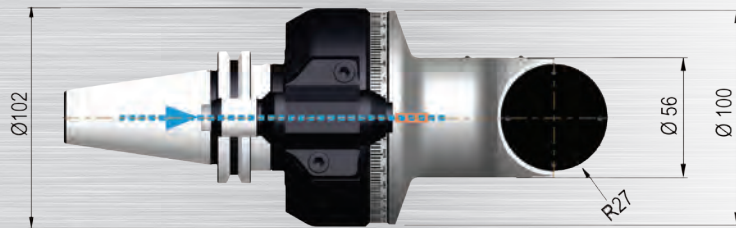
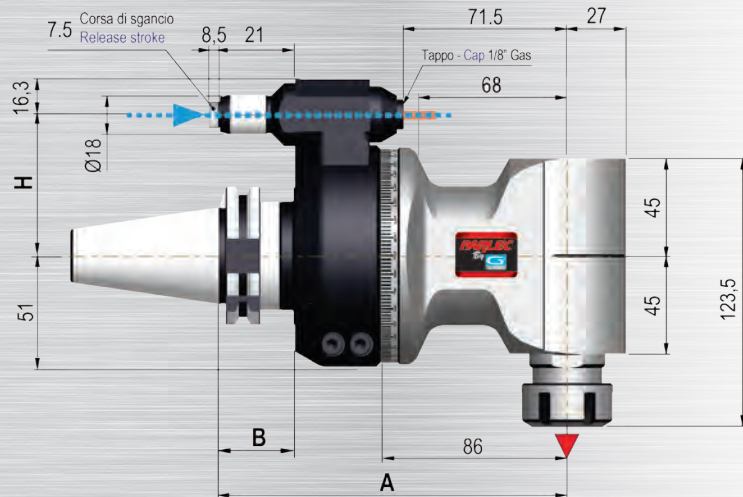
F90-13L With optional double output

Evolution Angle Heads

140 8,000 RPM Automatic Tool Change High Speed Series

F90-16S

Anti-Rotation Interchangeability: TYPE 1 (See page 166)
(Option type 2 and 3 anti-rotation available see page 166)



Reduced performances with shank size C5

APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 25	1-16 mm	1:1	8,000	182 lbs. (810 N)	239 in/ lbs. (27 Nm)	Positioning Pin	Opposite Spindle
See next page for Optional Output Shaft: Double ER. Additional Output Shafts available: Weldon, and Shell Mill					See next page for Optional coolant: Through Spindle from Pin. Configured for optional internal air pressure		

PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
F90-16S-C40	CAT 40	6.30 (160)	1.38 (35)	2.559 (65)	H=3.149 (80)	14 lbs. (6.4 kg)	Stop Block Wrenches Grease Instructions
F90-16S-B40	BT 40	6.30 (160)	1.38 (35)	2.559 (65)	H=3.149 (80)	14 lbs. (6.4 kg)	
F90-16S-C50	CAT 50	6.30 (160)	1.38 (35)	3.149 (80)	H=4.330 (110)	19.1 lbs. (8.7 kg)	
F90-16S-B50	BT 50	6.61 (168)	1.69 (43)	3.149 (80)	H=4.330 (110)	19.1 lbs. (8.7 kg)	
F90-16S-H63	HSK63A	6.65 (169)	1.73 (44)	2.559 (65)	H=3.149 (80)	14 lbs. (6.4 kg)	
F90-16S-H100	HSK100A	6.65 (169)	1.81 (46)	3.149 (80)	-	19.1 lbs. (8.7 kg)	

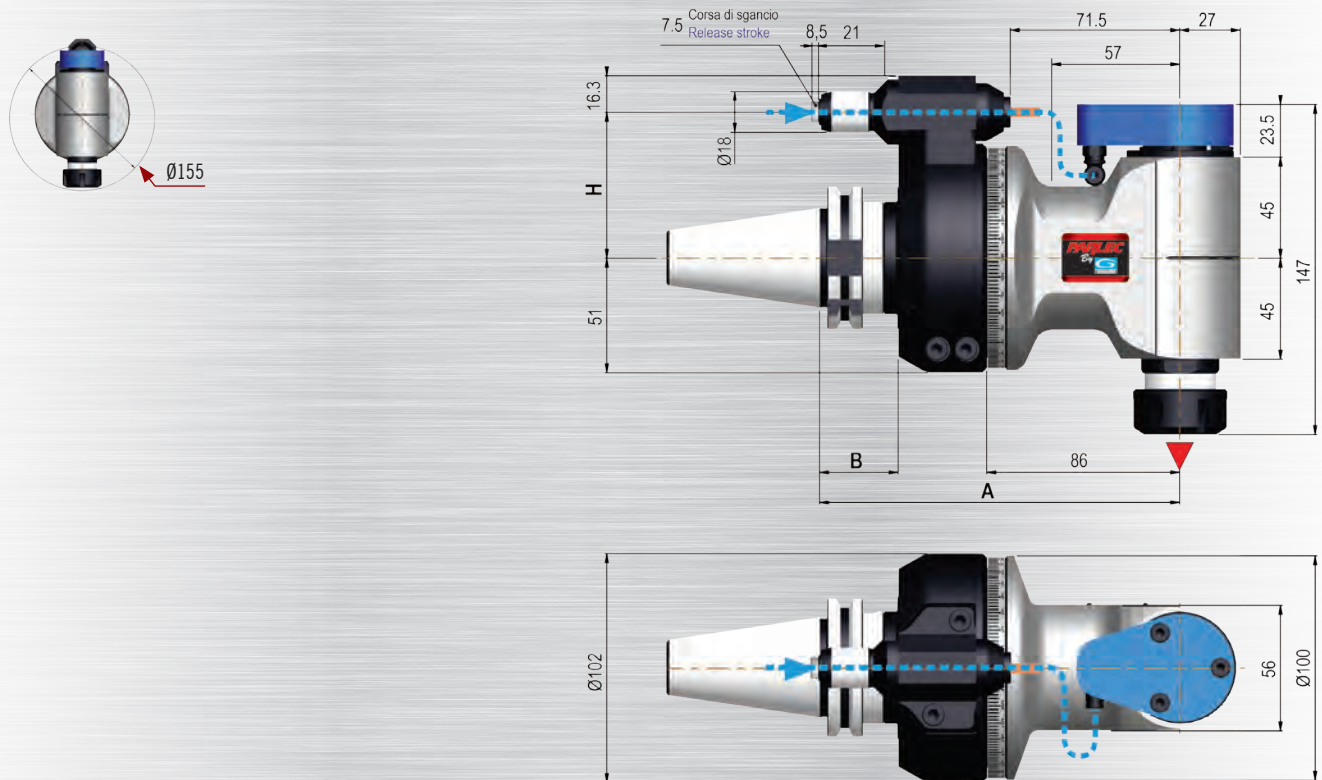
Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63. Order ER25 Collets separately. See pages 55-61.

Evolution Angle Heads

8,000 RPM Automatic Tool Change Coolant High Speed Series

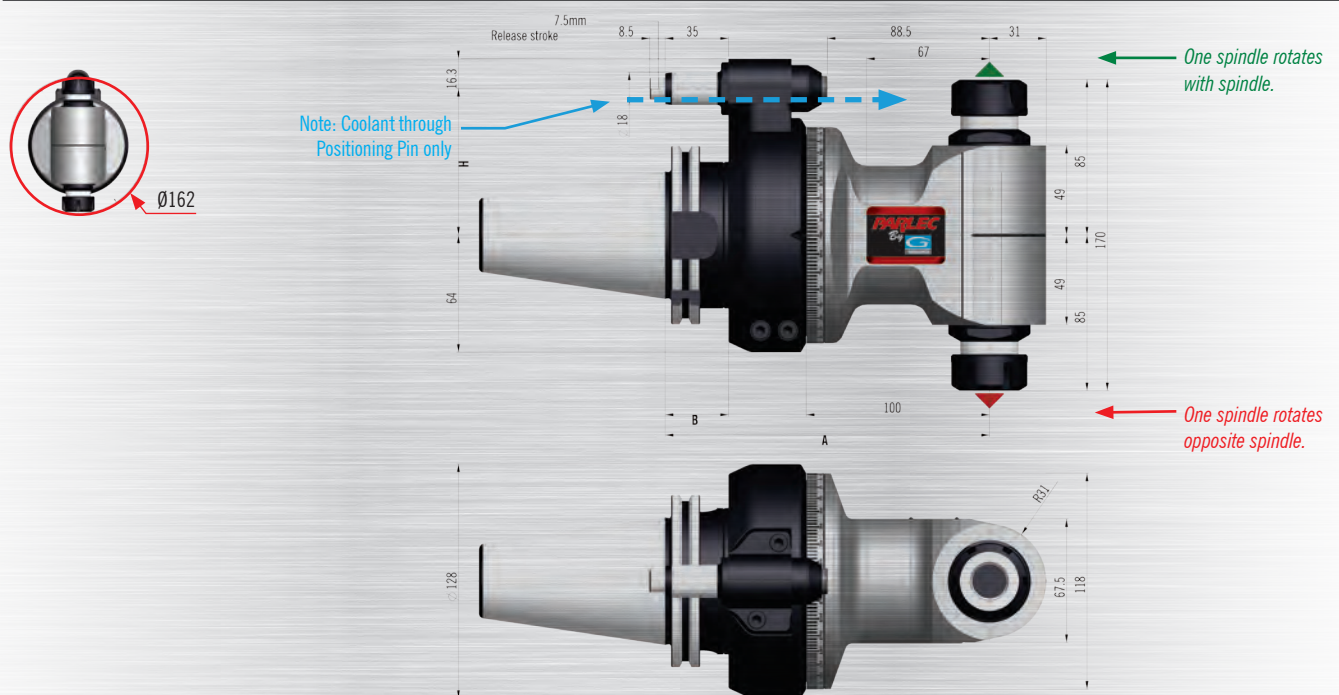
141

F90-16SC With optional 150 psi coolant piped through output shaft



DRY RUNNING NOT POSSIBLE

F90-16SD With optional double output

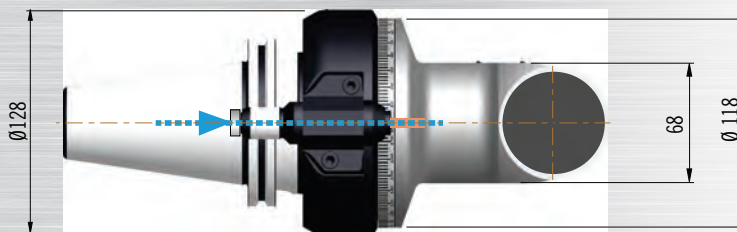
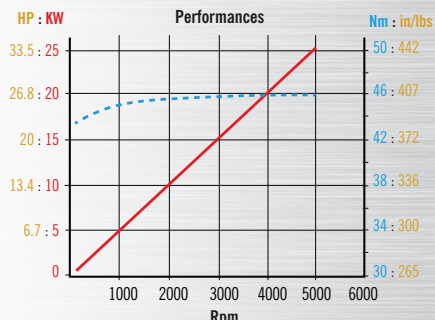
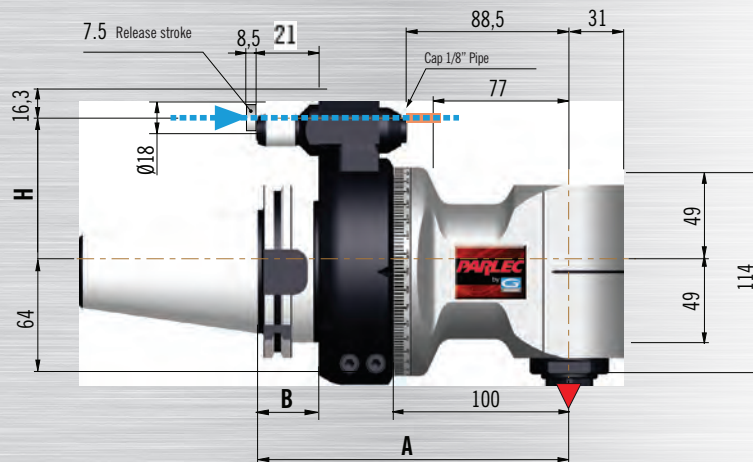
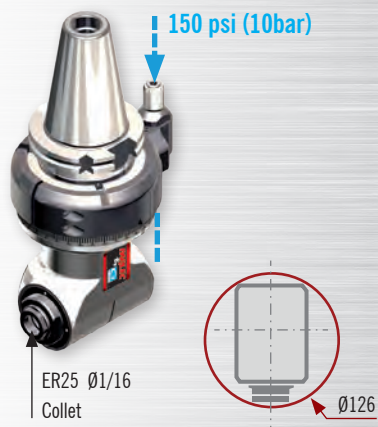


Evolution Angle Heads

142 5,000 RPM Automatic Tool Change High Torque Milling Series

F90-16

Anti-Rotation Interchangeability: TYPE 2 (See page 166)



APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 25	1-16 mm	1:1	5,000	203 lbs. (1040 N)	407 in/ lbs. (46 Nm)	Positioning Pin	Opposite Spindle

*See next page for Optional Output Shaft: Double ER.
Additional Output Shafts available: Weldon, Shell Mill, HSK32A*

*See next page for Optional coolant: Through Spindle from Pin.
Configured for optional internal air pressure*

PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
F90-16-C50	CAT 50	6.97 (177)	1.38 (35)	3.149 (80)	H=4.330 (110)	24.2 lbs. (11 kg)	Stop Block
F90-16-B50	BT 50	7.28 (185)	1.69 (43)	3.149 (80)	H=4.330 (110)	24.2 lbs. (11 kg)	Wrenches
F90-16-H100	HSK100A	7.32 (186)	1.81 (46)	3.149 (80)	H=4.330 (110)	24.2 lbs. (11 kg)	Grease
F90-16-CTP8	C8 (ISO 26623)	7.13 (181)	-	3.149 (80)	H=4.330 (110)	24.2 lbs. (11 kg)	Instructions

Other Shank Options available: HSK 80, KM 80, and 100. Order ER25 Collets separately. See pages 55-61.

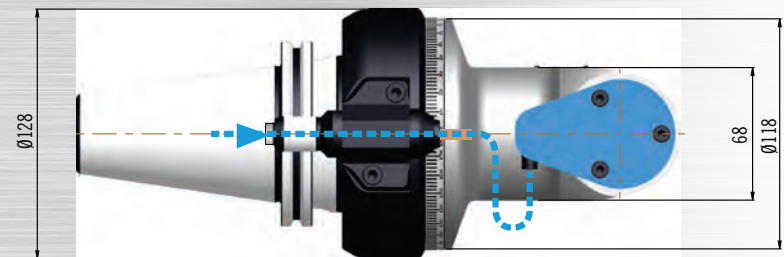
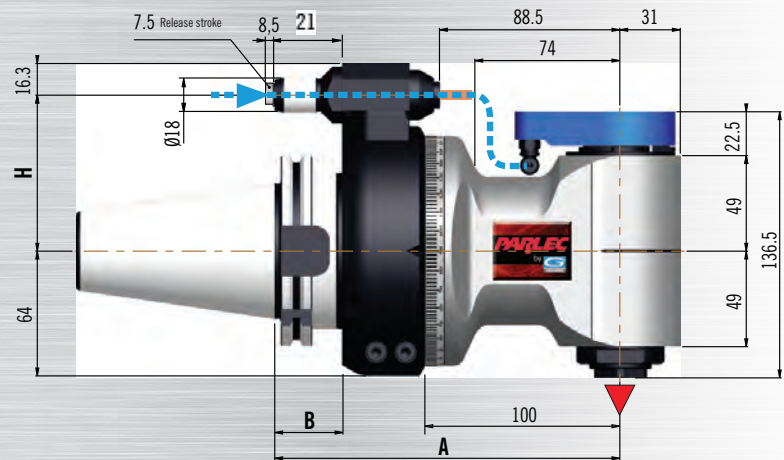
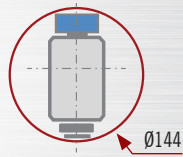
Evolution Angle Heads

5,000 RPM Automatic Tool Change Coolant High Torque Milling Series

143

F90-16C

With optional 150 psi coolant piped through output shaft



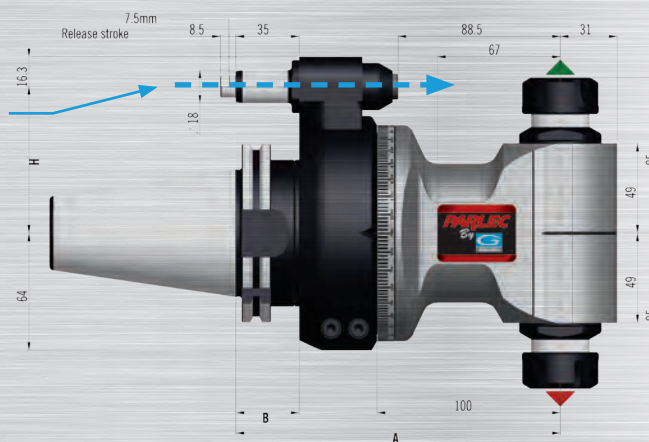
DRY RUNNING NOT POSSIBLE

F90-16D

With optional double output

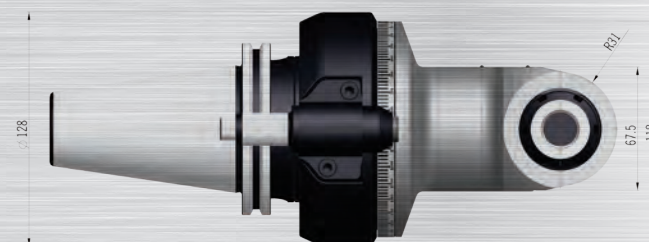


Note: Coolant through Positioning Pin only



One spindle rotates with spindle.

One spindle rotates opposite spindle.



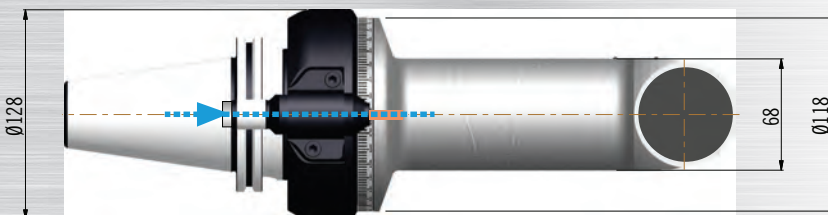
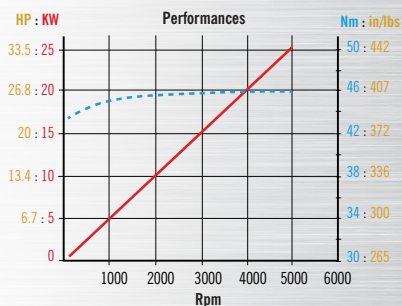
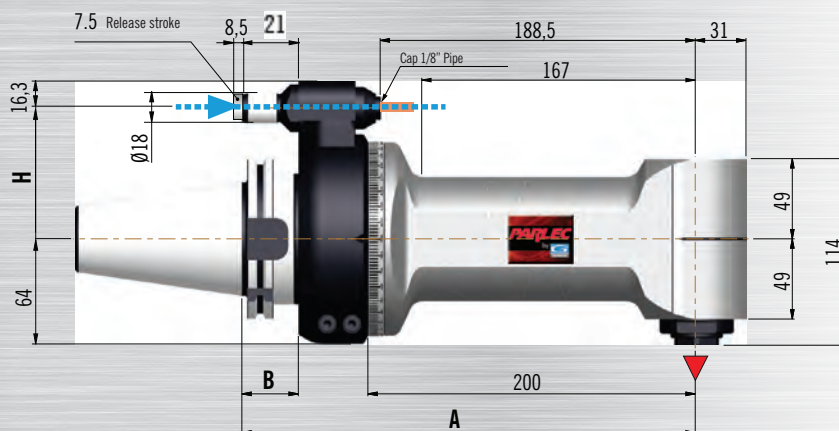
Evolution Angle Heads

144 5,000 RPM Automatic Tool Change Long High Torque Milling Series

F90-16L

Anti-Rotation Interchangeability: TYPE 2 (See page 166)

(Option type 3 anti-rotation available see page 166)



APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER25	1-16 mm	1:1	5,000	223 lbs. (1040 N)	407 in/ lbs. (46 Nm)	Positioning Pin	Opposite Spindle
See next page for Optional Output Shaft: Double ER. Additional Output Shafts available: Weldon, Shell Mill, HSK32A					See next page for Optional coolant: Through Spindle from Pin. Configured for optional internal air pressure.		

PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
F90-16L-C50	CAT 50	10.90 (277)	1.38 (35)	3.149 (80)	H=4.330 (110)	28 lbs. (12.7 kg)	Stop Block Wrenches
F90-16L-B50	BT 50	11.22 (285)	1.69 (43)	3.149 (80)	H=4.330 (110)	28 lbs. (12.7 kg)	Grease
F90-16L-H100	HSK100A	11.26 (286)	1.81 (46)	3.149 (80)	H=4.330 (110)	28 lbs. (12.7 kg)	Instructions
F90-16L-CTP8	C8 (ISO 26623)	11.07 (281)	-	3.149 (80)	H=4.330 (110)	28 lbs. (12.7 kg)	

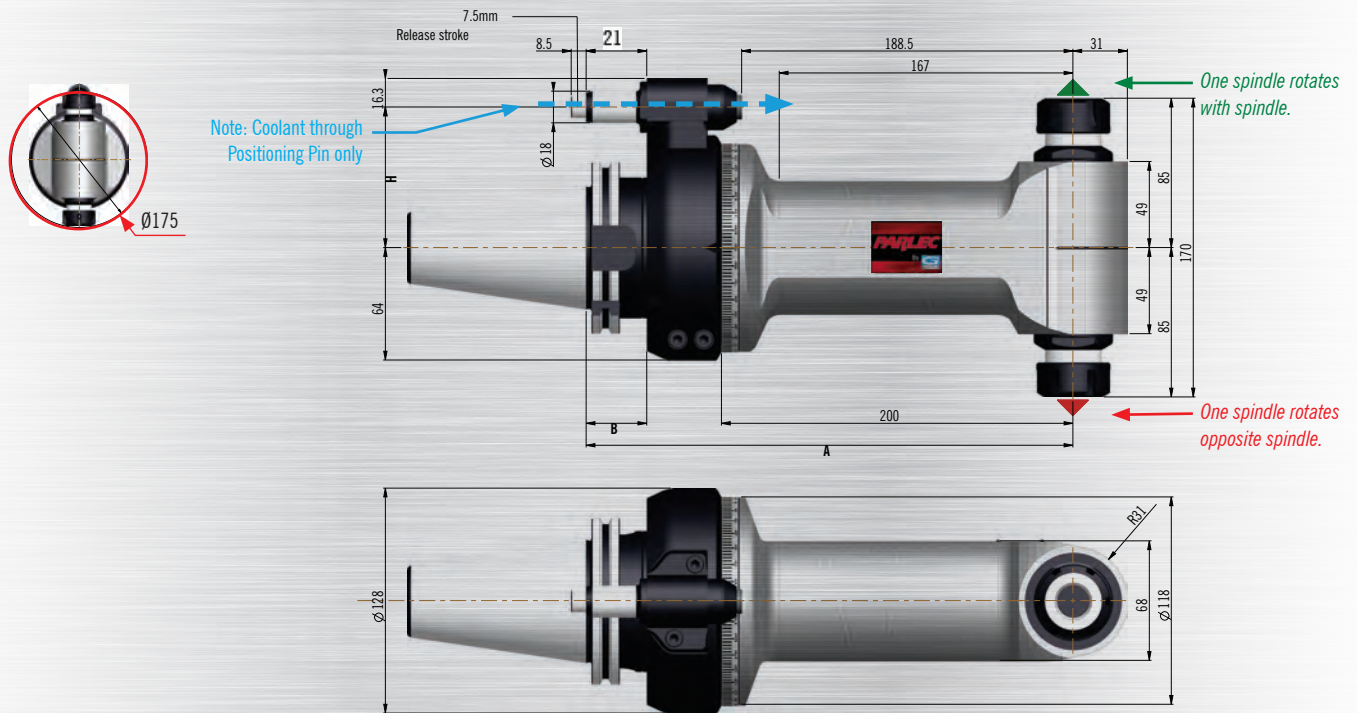
Other Shank Options available: HSK 80, KM 80 and 100. Order ER25 Collets separately. See pages 55-61.

Evolution Angle Heads

5,000 RPM Automatic Tool Change Long High Torque Milling Series

145

F90-16LD With optional double output



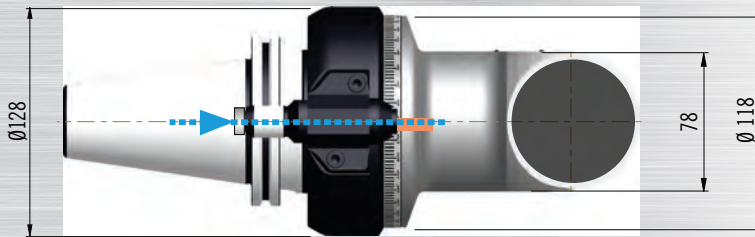
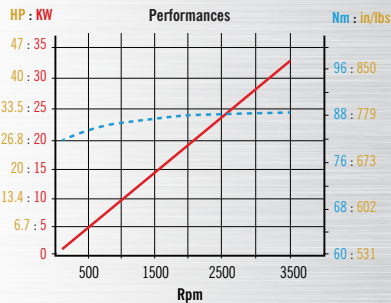
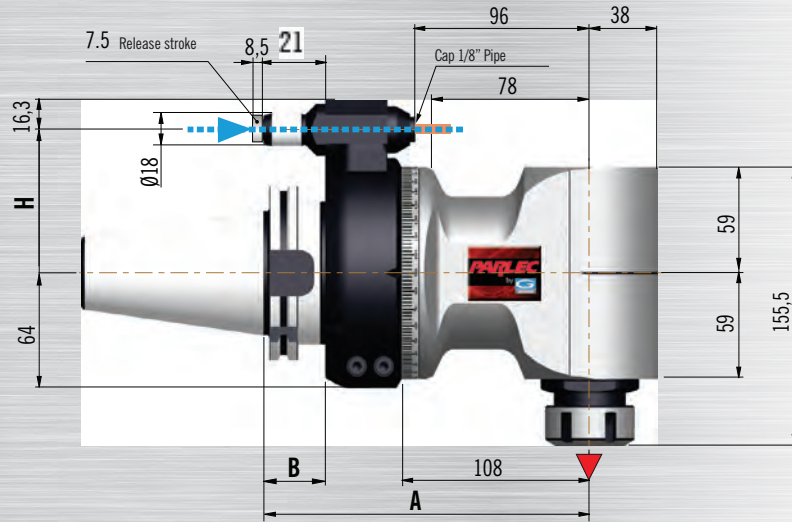
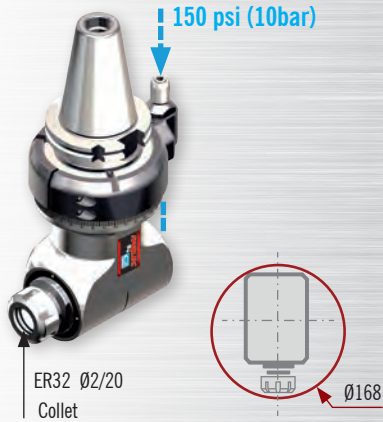
Evolution Angle Heads

146 3,500 RPM Automatic Tool Change High Tourque Milling Series

F90-20

Anti-Rotation Interchangeability: TYPE 2 (See page 166)

(Option type 3 anti-rotation available see page 166)



APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 32	1-20 mm	1:1	3,500	328 lbs. (1460 N)	752 in/ lbs. (85 Nm)	Positioning Pin	Opposite Spindle
See next page for Optional Output Shaft: Double ER. Additional Output Shafts available: Weldon, HSK40A, Cpt4					See next page for Optional coolant: Through Spindle from Pin. Configured for optional internal air pressure		

PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
F90-20-C50	CAT 50	7.28 (185)	1.38 (35)	3.149 (80)	H=4.330 (110)	29 lbs. (13.2 kg)	Stop Block
F90-20-B50	BT 50	7.59 (193)	1.69 (43)	3.149 (80)	H=4.330 (110)	29 lbs. (13.2 kg)	Wrenches
F90-20-H100	HSK100A	7.63 (194)	1.81 (46)	3.149 (80)	H=4.330 (110)	28 lbs. (12.7 kg)	Grease
F90-20-CTP8	C8 (ISO 26623)	7.44 (189)	-	3.149 (80)	H=4.330 (110)	28 lbs. (12.7 kg)	Instructions

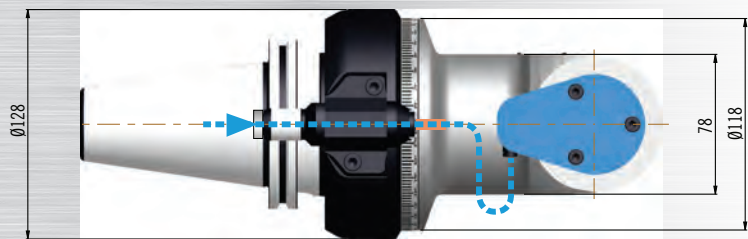
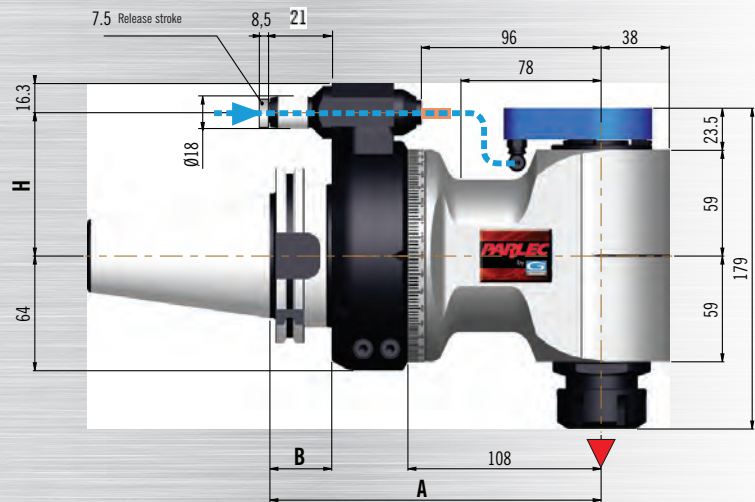
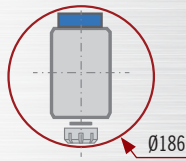
Other Shank Options available: HSK 80, KM 80 and 100. Order ER32 Collets separately. See pages 55-61.

Evolution Angle Heads

3,500 RPM Automatic Tool Change Coolant High Torque Milling Series

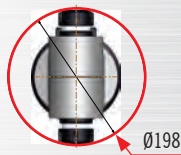
147

F90-20C With optional 150 psi coolant piped through output shaft

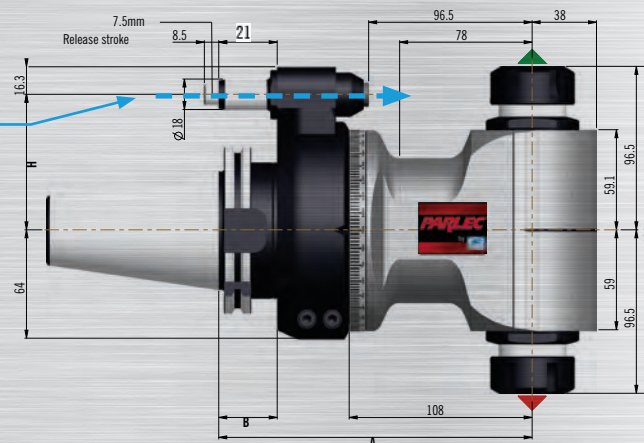


DRY RUNNING NOT POSSIBLE

F90-20D With optional double output

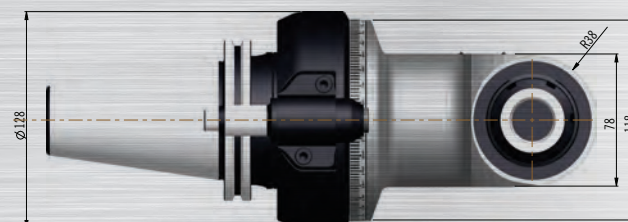


Note: Coolant through Positioning Pin only



One spindle rotates with spindle.

One spindle rotates opposite spindle.

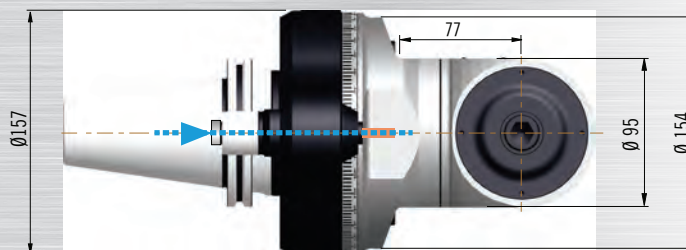
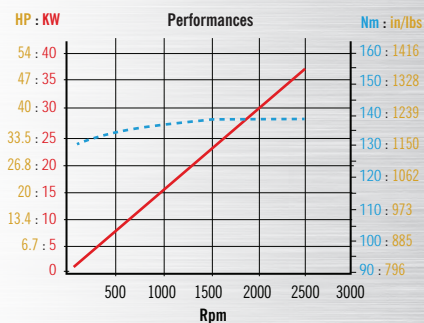
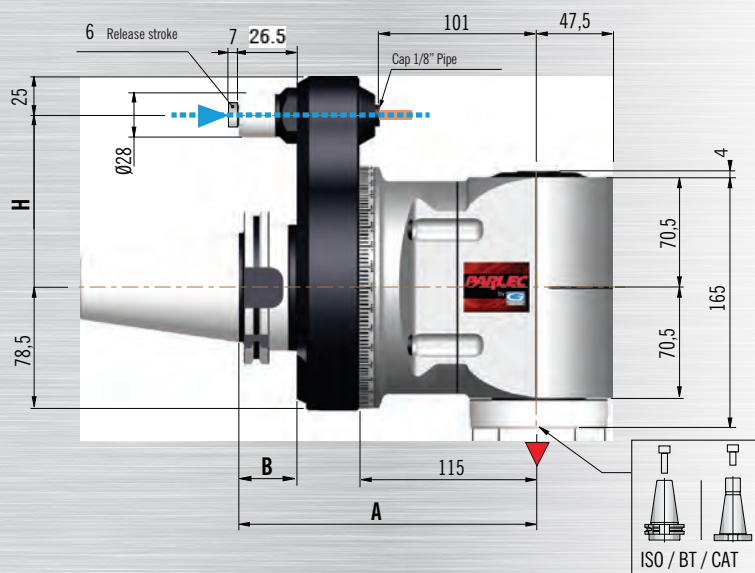


Evolution Angle Heads

148 2,500 RPM Automatic Tool Change High Tourque Milling Series

F90-S40

Anti-Rotation Interchangeability: **TYPE 3** (See page 166)



APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
CAT 40/ CAT 50	-	1 : 1	2,500	680 lbs. (3020 N)	1196 in/ lbs. (135 Nm)	Positioning Pin	Opposite Spindle
See next page for Optional Output Shaft: Double ER. Additional Output Shafts available: Weldon, HSK40A, Cpt4				See next page for Optional coolant: Through Spindle from Pin. Configured for optional internal air pressure			

PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
F90-S40-C50	CAT 50	7.56 (192)	1.46 (37)	4.330 (110)	-	48 lbs. (21.7 kg)	Stop Block
F90-S40-H100	HSK100A	7.91 (201)	1.89 (48)	4.330 (110)	-	48 lbs. (21.7 kg)	Wrenches
F90-S40-CTP8	C8 (ISO 26623)	7.72 (196)	-	4.330 (110)	-	48 lbs. (21.7 kg)	Grease Instructions

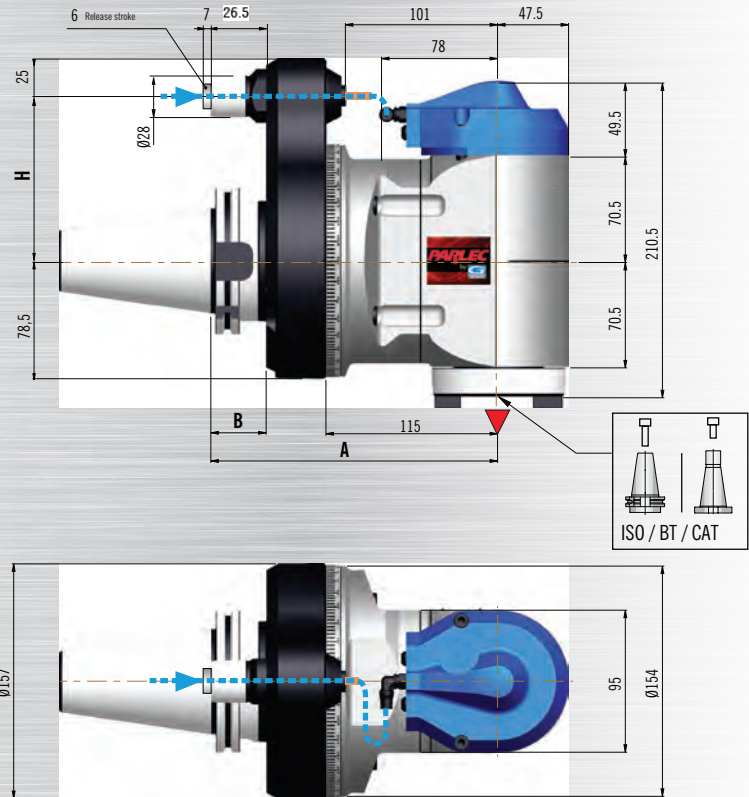
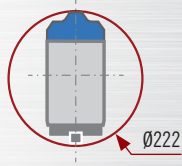
Other Shank Options available: BT 50 , HSK 80, KM 80 and 100.

Evolution Angle Heads

2,500 RPM Automatic Tool Change Coolant High Torque Milling Series

149

F90-S40C With optional 1,000 psi coolant piped through output shaft



DRY RUNNING NOT POSSIBLE

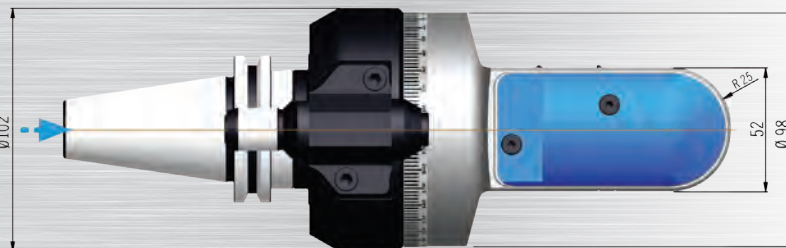
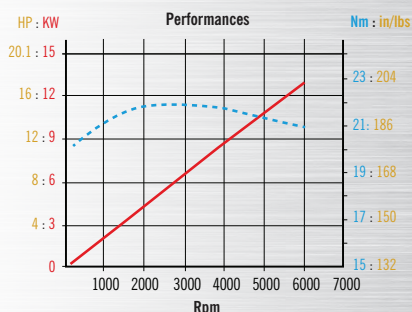
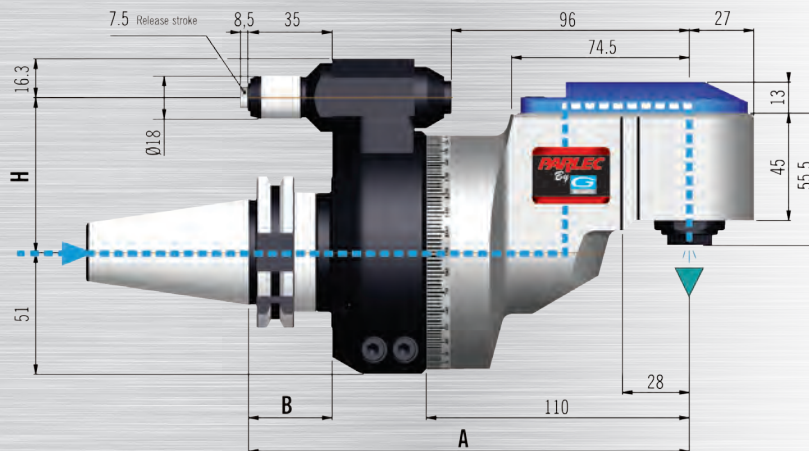
Evolution Angle Heads

150 6,000 RPM High Pressure Automatic Tool Change Offset Series

FR90-10

Anti-Rotation Interchangeability: TYPE 1 (See page 166)

(Option type 2 and 3 anti-rotation available see page 166)



DRY RUNNING NOT POSSIBLE

APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 16	1-10 mm	1:1	6,000	112 lbs. (500 N)	194 in/ lbs. (22 Nm)	1000 psi (70 Bar)	Same As Spindle
Optional Output Shaft: Weldon						Through the Spindle	

PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
FR90-10-C40	CAT 40	7.26 (184.5)	1.38 (35)	2.559 (65)	H=3.149 (80)	13.6 lbs. (6.2 kg)	Stop Block Wrenches Grease Instructions
FR90-10-B40	BT 40	7.26 (184.5)	1.38 (35)	2.559 (65)	H=3.149 (80)	13.6 lbs. (6.2 kg)	
FR90-10-C50	CAT 50	7.26 (184.5)	1.38 (35)	3.149 (80)	-	19.1 lbs. (8.7 kg)	
FR90-10-B50	BT 50						
FR90-10-H63	HSK63A	7.62 (193.5)	1.73 (44)	2.559 (65)	H=3.149 (80)	13.6 lbs. (6.2 kg)	
FR90-10-H100	HSK100A	7.62 (193.5)	1.81 (46)	3.149 (80)	-	19.1 lbs. (8.7 kg)	

Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63. Order ER16 Collets separately. See pages 55-61.

Evolution Angle Heads

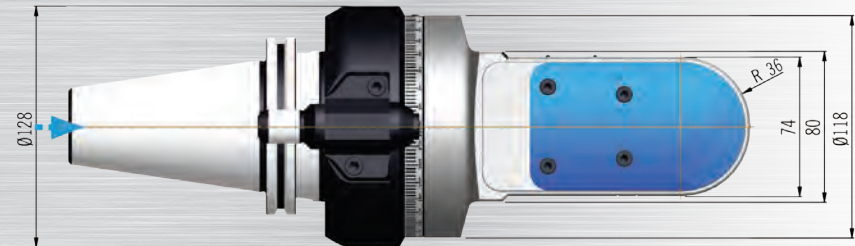
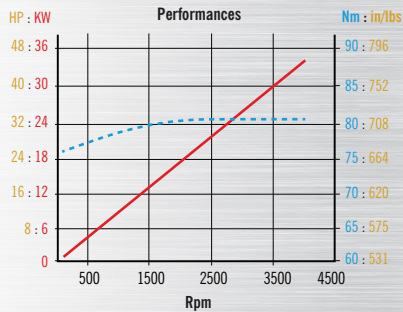
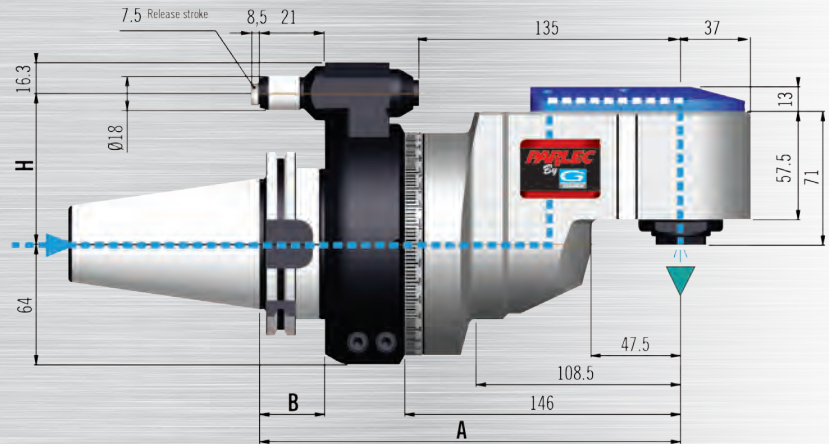
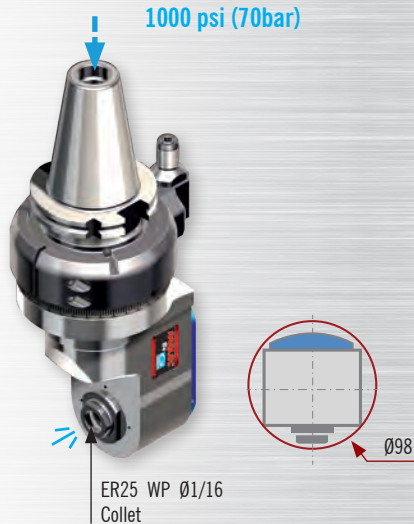
6,000 RPM High Pressure Automatic Tool Change Coolant Offset Series

151

FR90-16

Anti-Rotation Interchangeability: TYPE 2 (See page 166)

(Option type 3 anti-rotation available see page 186)



DRY RUNNING NOT POSSIBLE

APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 25	1-16 mm	1:1	4,000	182 lbs. (810 N)	708 in/ lbs. (80 Nm)	1000 psi (70 Bar)	Same As Spindle
Optional Output Shaft: Weldon						Through the Spindle	

PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
FR90-10-C50	CAT 50	8.80 (223.5)	1.38 (35)	3.149 (80)	H=4.330 (110)	25.8 lbs. (11.7 kg)	Stop Block Wrenches Grease Instructions
FR90-10-H100	HSK100A	9.15 (232.5)	1.81 (46)	3.149 (80)	H=4.330 (110)	25.8 lbs. (11.7 kg)	
FR90-16-CTP8	C8 (ISO 26623)	8.97 (227.8)	-	3.149 (80)	H=4.330 (110)	25.8 lbs. (11.7 kg)	

Other Shank Options available: BT 50, HSK 80, KM 80 and 100. Order ER25 Collets separately. See pages 55-61.

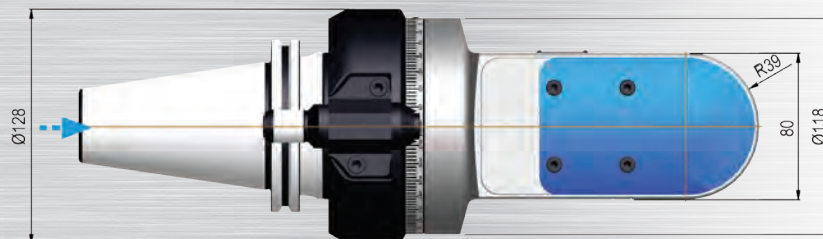
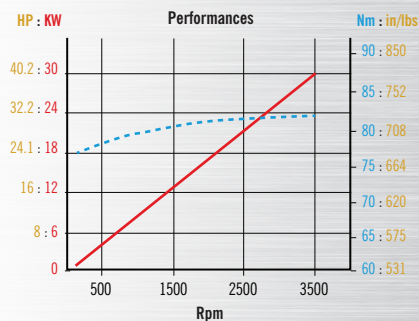
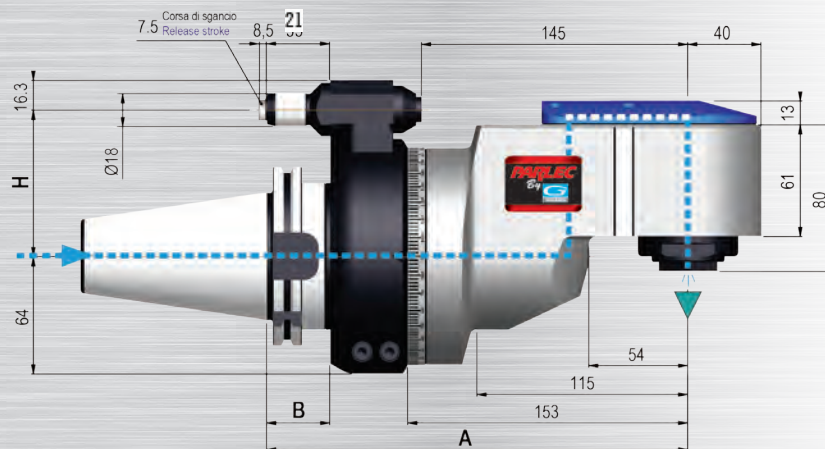
Evolution Angle Heads

152 3,500 RPM High Pressure Automatic Tool Change Coolant Offset Series

FR90-20

Anti-Rotation Interchangeability: TYPE 2 (See page 166)

(Option type 3 anti-rotation available see page 166)



DRY RUNNING NOT POSSIBLE

APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 32	1-20 mm	1:1	3,500	258 lbs. (1150 N)	726 in/ lbs. (82 Nm)	1000 psi (70 Bar)	Same as Spindle
<i>Optional Output Shaft: HSK 50A, Weldon</i>					<i>Through the Spindle</i>		

PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
FR90-20-C50	CAT 50	9.06 (230)	1.38 (35)	3.149 (80)	H=4.330 (110)	32 lbs. (14.5 kg)	Stop Block Wrenches Grease Instructions
FR90-20-H100	HSK100A	9.41 (239)	1.81 (46)	3.149 (80)	H=4.330 (110)	32 lbs. (14.5 kg)	
FR90-20-CTP8	C8 (ISO 26623)	9.21 (234)	-	3.149 (80)	H=4.330 (110)	32 lbs. (14.5 kg)	

Other Shank Options available: C5, C6, and KM 63. Order ER32 Collets separately. See pages 55-61.

Evolution Angle Heads

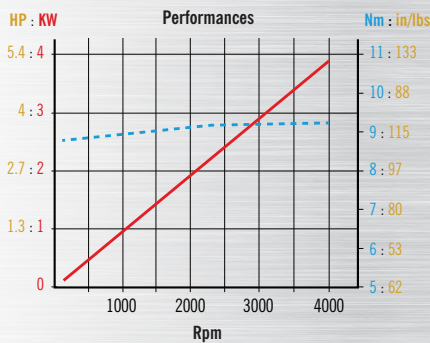
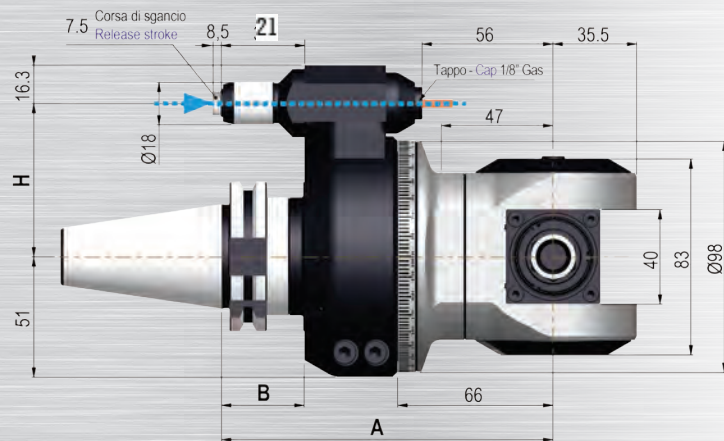
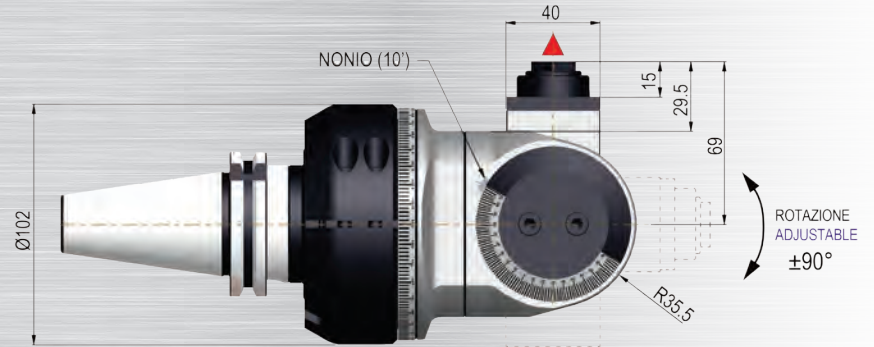
4,000 RPM Adjustable Angle Automatic Tool Change Series

153

FMU-10

Anti-Rotation Interchangeability: TYPE 1 (See page 166)

(Option type 2 and 3 anti-rotation available see page 166)



APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 16	1-10 mm	1:1	4,000	124 lbs. (550 N)	80 in/ lbs. (9 Nm)	Positioning Pin	Opposite Spindle
<i>Optional Output Shaft: Weldon</i>			<i>Configured for optional internal air pressure</i>				

PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
FMU-10-C40	CAT 40	5.51 (140)	1.38 (35)	2.559 (65)	H=3.149 (80)	13.8 lbs. (5.3 kg)	Stop Block Wrenches Grease Instructions
FMU-10-B40	BT 40	5.51 (140)	1.38 (35)	2.559 (65)	H=3.149 (80)	13.8 lbs. (5.3 kg)	
FMU-10-C50	CAT 50	5.51 (140)	1.38 (35)	3.149 (80)	H=4.330 (110)	19.4 lbs. (8.8 kg)	
FMU-10-B50	BT 50	5.82 (148)	1.69 (43)	3.149 (80)	H=4.330 (110)	19.4 lbs. (8.8 kg)	
FMU-10-H63	HSK63A	5.87 (149)	1.73 (44)	2.559 (65)	H=3.149 (80)	13.9 lbs. (5.3 kg)	
FMU-10-H100	HSK100A	5.87 (149)	1.81 (46)	3.149 (80)	-	19.4 lbs. (8.8 kg)	

Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63. Order ER16 Collets separately. See pages 55-61.

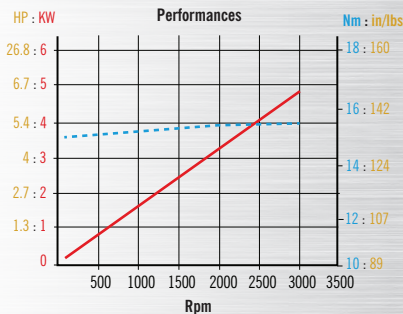
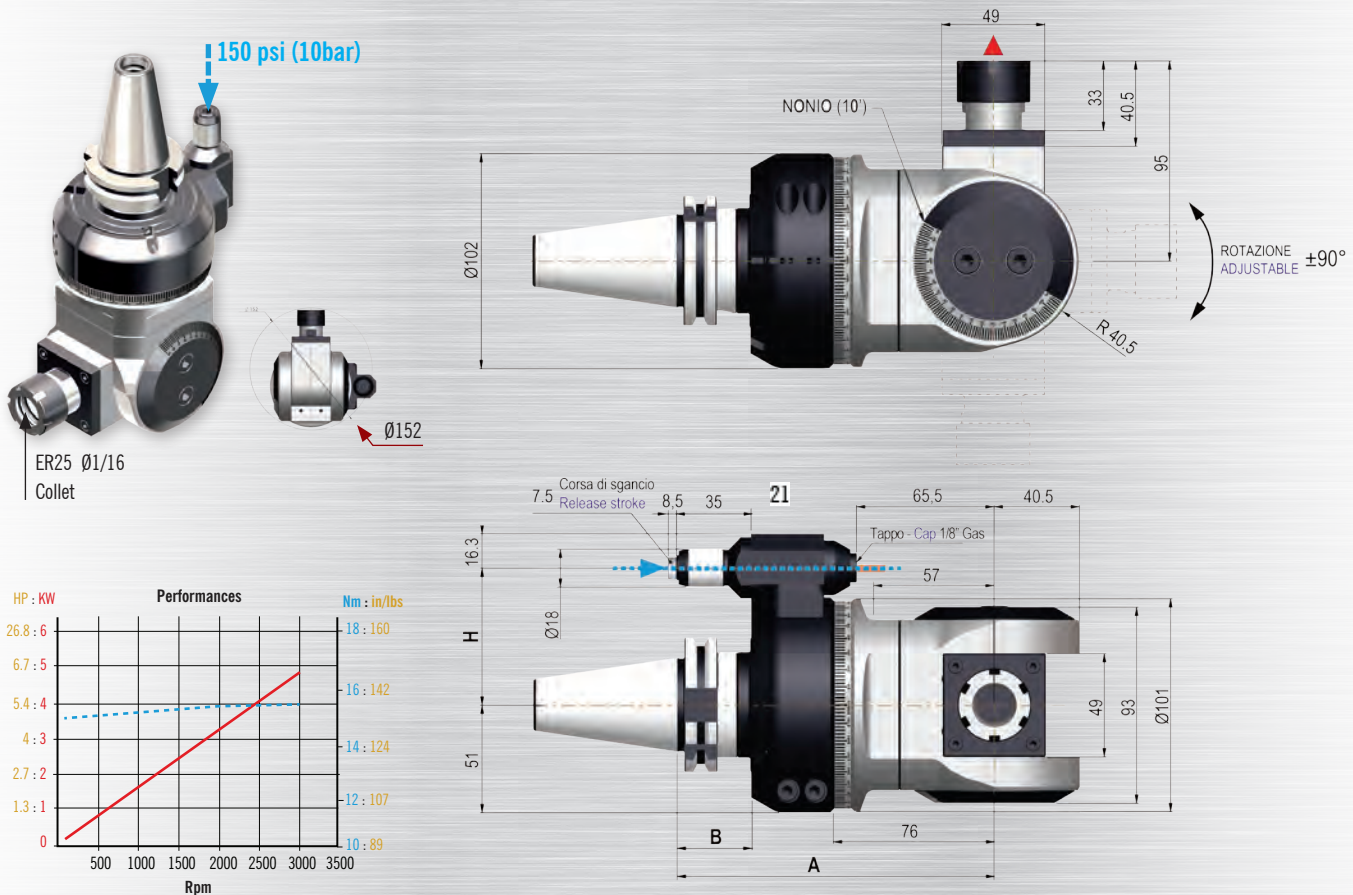
Evolution Angle Heads

154 3,000 RPM Adjustable Angle Automatic Tool Change Series

FMU-16

Anti-Rotation Interchangeability: TYPE 1 (See page 166)

(Option type 2 and 3 anti-rotation available see page 166)



APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 25	1-16 mm	1:1	3,000	142 lbs. (630 N)	133 in/ lbs. (15 Nm)	Positioning Pin	Opposite Spindle
Optional Output Shaft: Weldon			Configured for optional internal air pressure				

PRODUCT

Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
FMU-16-C40	CAT 40	5.90 (150)	1.38 (35)	2.559 (65)	H=3.149 (80)	18 lbs. (8.2 kg)	Stop Block
FMU-16-B40	BT 40	5.90 (150)	1.38 (35)	2.559 (65)	H=3.149 (80)	18 lbs. (8.2 kg)	Wrenches
FMU-16-C50	CAT 50	5.90 (150)	1.38 (35)	3.149 (80)	H=4.330 (110)	23.1 lbs. (10.5 kg)	Grease
FMU-16-C50	CAT 50	6.22 (158)	1.69 (43)	3.149 (80)	H=4.330 (110)	23.1 lbs. (10.5 kg)	Instructions
FMU-16-H63	HSK63A	6.26 (159)	1.73 (44)	2.559 (65)	H=3.149 (80)	18 lbs. (8.2 kg)	
FMU-16-H100	HSK100A	6.26 (159)	1.81 (46)	3.149 (80)	-	23.1 lbs. (10.5 kg)	

Other Shank Options available: C5, C6, C8 (ISO 26623) and KM 63. Order ER25 Collets separately. See pages 55-61.

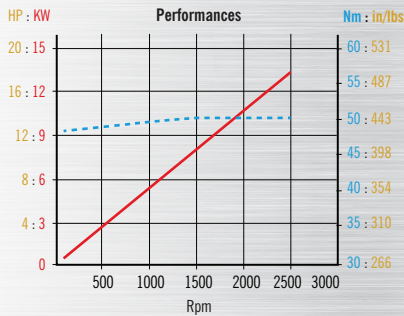
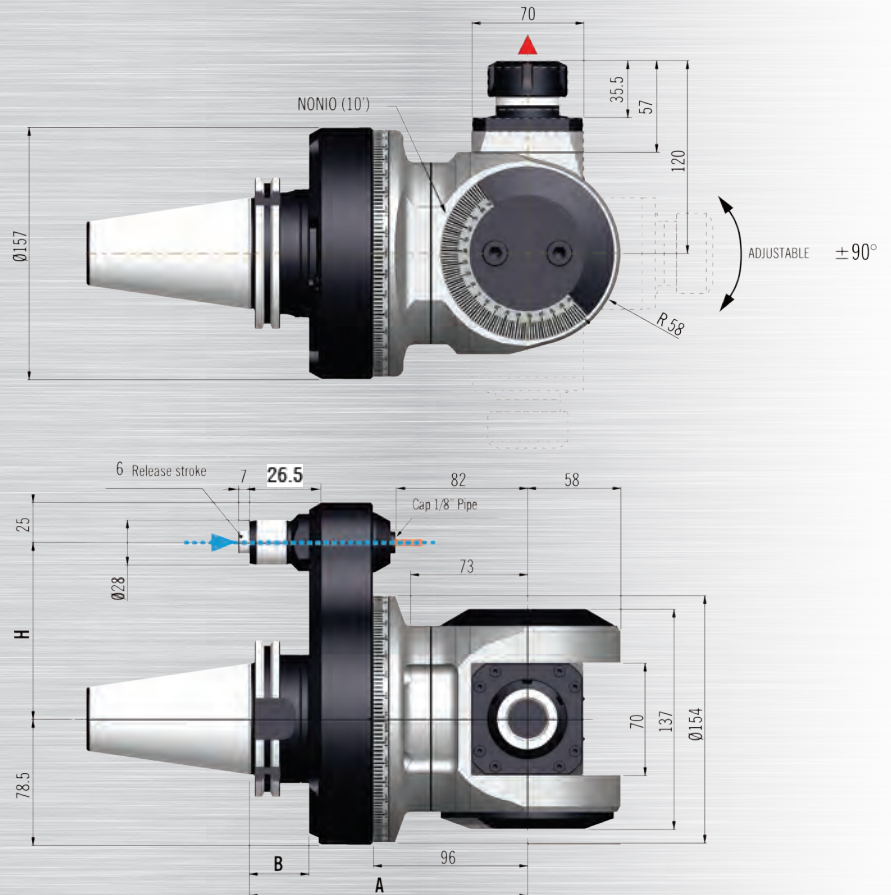
Evolution Angle Heads

2,500 RPM Adjustable Angle Automatic Tool Change Series

155

FMU-20

Anti-Rotation Interchangeability: TYPE 3 (See page166)



APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 32	2-20 mm	1:1	2,500	391 lbs. (1740 N)	425 in/ lbs. (48 Nm)	Positioning Pin	Opposite Spindle
<i>Optional Output Shaft: Weldon</i>					<i>Configured for optional internal air pressure</i>		

PRODUCT

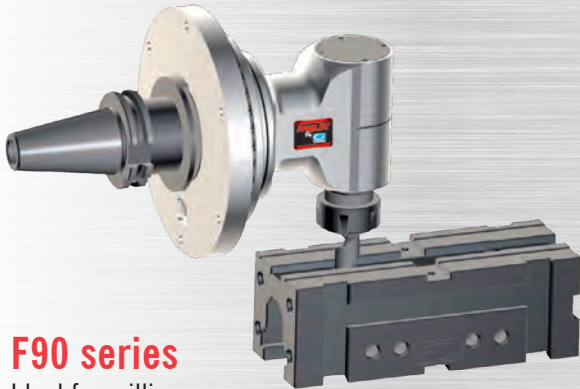
Description	Shank	A	B	H	H Options	Weight	Spares (Incl.)
FMU-20-C50	CAT 50	6.81 (173)	1.46 (37)	4.330 (110)	-	48 lbs. (22 kg)	Stop Block
FMU-20-B50	BT 50	7.12 (181)	1.77 (45)	4.330 (110)	-	48 lbs. (22 kg)	Wrenches
FMU-20-H100	HSK100A	7.16 (182)	1.89 (48)	4.330 (110)	-	48 lbs. (22 kg)	Grease
FMU-20-CTP8	C8 (ISO 26623)	6.97 (177)	-	4.330 (110)	-	48 lbs. (22 kg)	Instructions

Other Shank Options available: HSK 80, KM 80, and 100. Order ER32 Collets separately. See pages 55-61.

Evolution Angle Heads

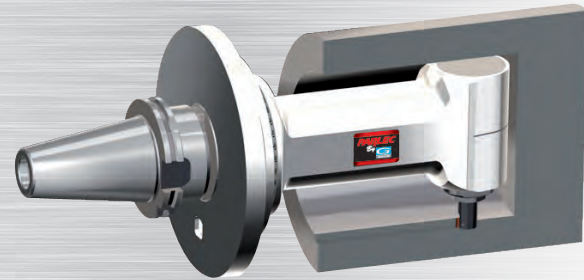
156 Selection Guide

MTC SERIES *EVOLUTION LINE* MANUAL TOOL CHANGE



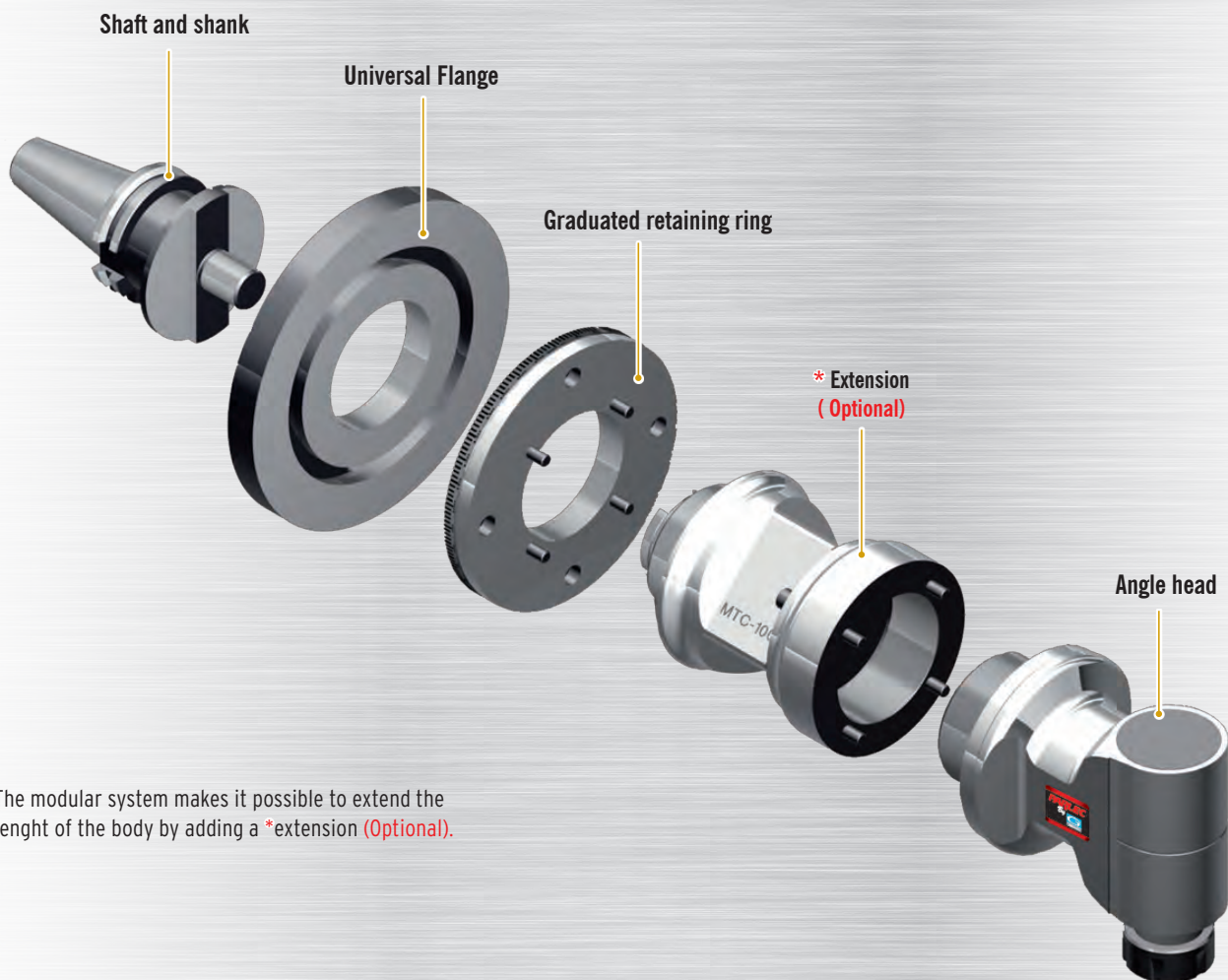
F90 series

Ideal for milling, drilling, tapping at $\pm 90^\circ$



F90L series

Long series for machining at deep positions



The modular system makes it possible to extend the length of the body by adding a *extension (Optional).

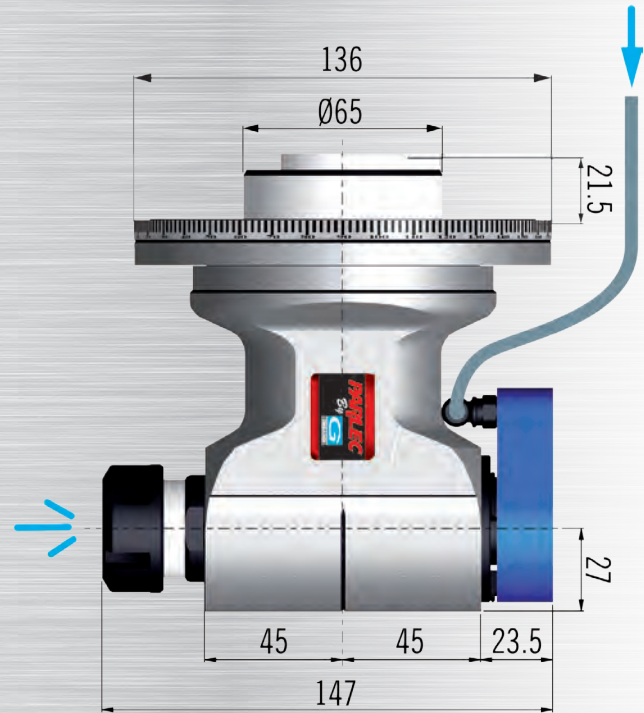
Evolution Angle Heads

INTERNAL COOLANT OPTION MTC SERIES



F90MTC-16S 150 PSI (10BAR)

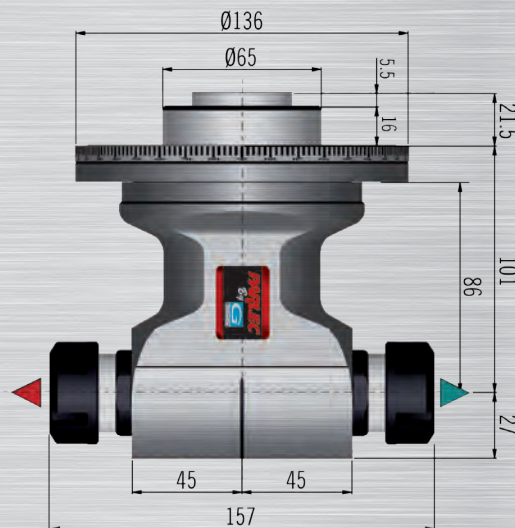
Coolant through the positioning pin and the tool, by rotating distributor



DOUBLE OUTPUT OPTION MTC SERIES



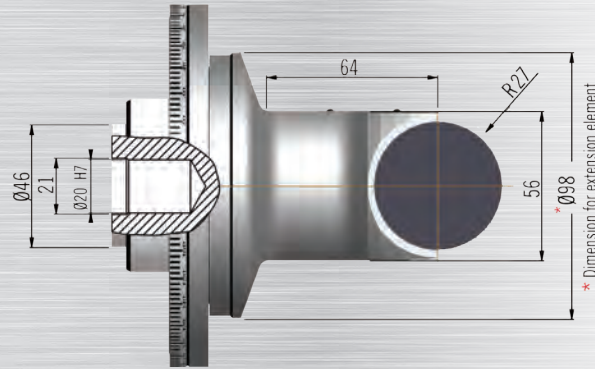
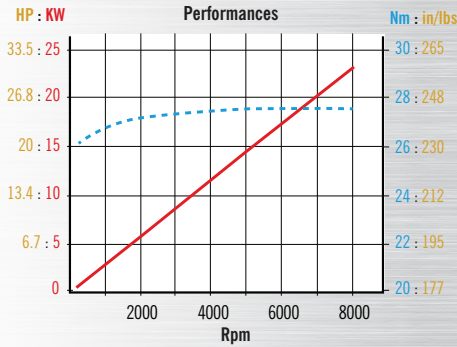
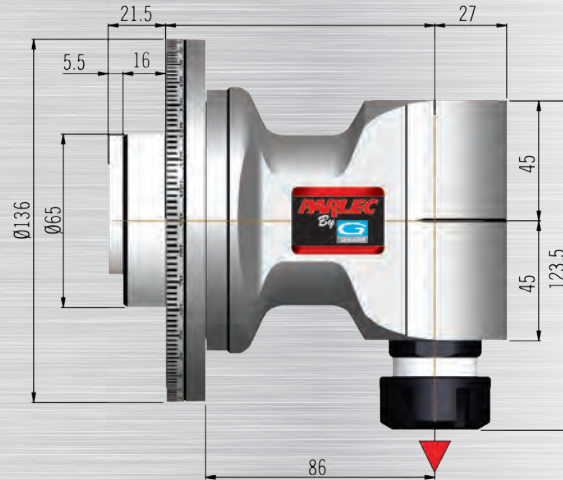
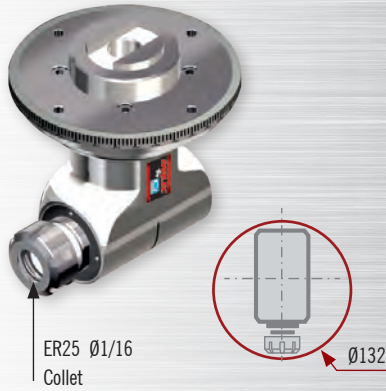
F90MTC-16S



Evolution Angle Heads

158 8,000 RPM Manual Tool Change Milling Series

F90MTC-16



APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 25	1-16 mm	1:1	8,000	182 lbs. (810 N)	239 in/ lbs. (27 Nm)	None	Opposite Spindle
See next page for Optional Output Shaft: Double ER. Additional Output Shafts available: Weldon, Shell Mill					Configured for optional internal air pressure		

PRODUCT

Description	Shank	A	Projection length of Drive Shank	Weight (Excluding Flange)	Spares (Incl.)
F90MTC-16S-C40	CAT 40	3.98 (101)*	1.38 (35)	14 lbs. (6.4 kg)	Stop Block
F90MTC-16S-B40	BT 40	3.98 (101)*	1.38 (35)	14 lbs. (6.4 kg)	Wrenches
F90MTC-16S-C50	CAT 50	3.98 (101)*	1.38 (35)	19.1 lbs. (8.7 kg)	Grease
F90MTC-16S-H63	HSK63A	3.98 (101)*	1.73 (44)	14 lbs. (6.4 kg)	Instructions
F90MTC-16S-H100	HSK100A	3.98 (101)* *Extension: 100 mm and 200 mm available see page 166	1.81 (46)	19.1 lbs. (8.7 kg)	Drive Shank Universal Flange

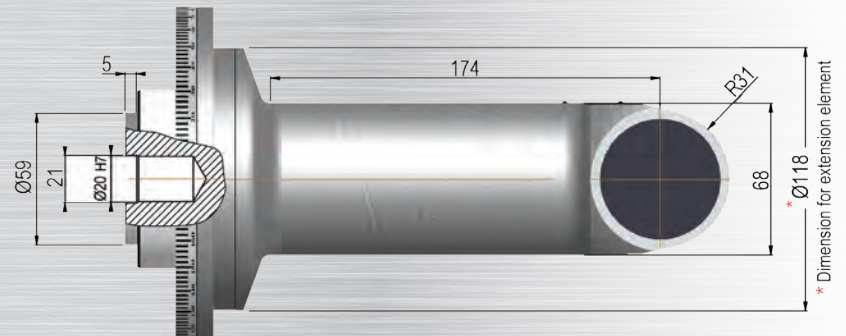
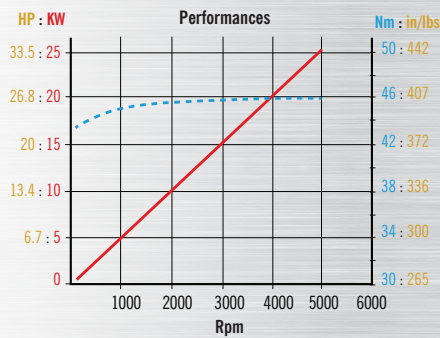
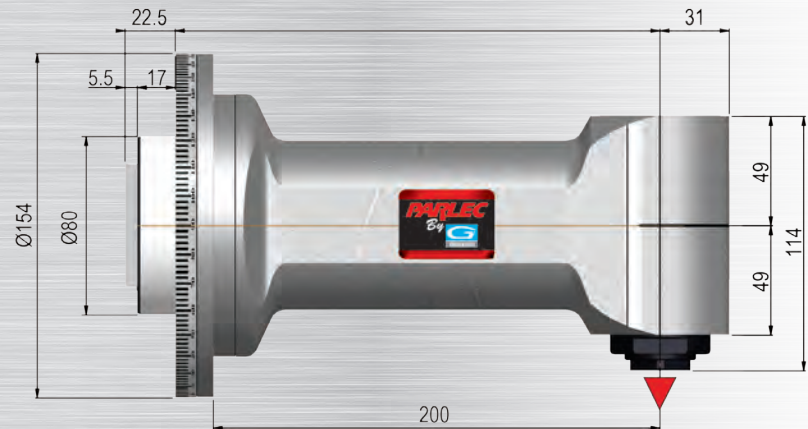
Other Shank Options available: C5, and C6 (ISO 26623). Order ER25 Collets separately. See pages 55-61.

Evolution Angle Heads

5,000 RPM Manual Tool Change Long High Torque Milling Series

159

F90MTC-16L



APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 25	1-16 mm	1:1	5,000	182 lbs. (810 N)	407 in/ lbs. (46 Nm)	None	Opposite Spindle
						Configured for optional internal air pressure	

See next page for Optional Output Shaft: Double ER.
Additional Output Shafts available: Weldon, Shell Mill, HSK32A

PRODUCT

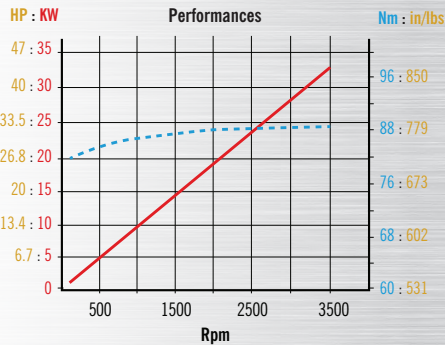
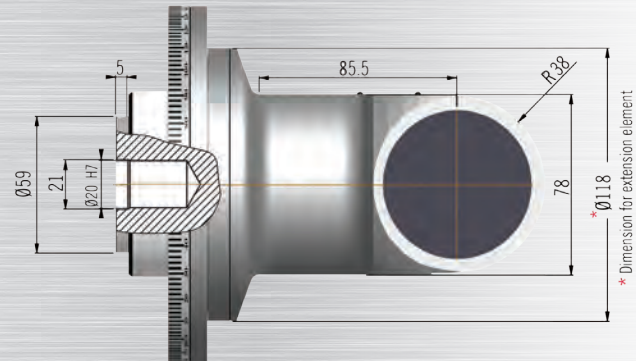
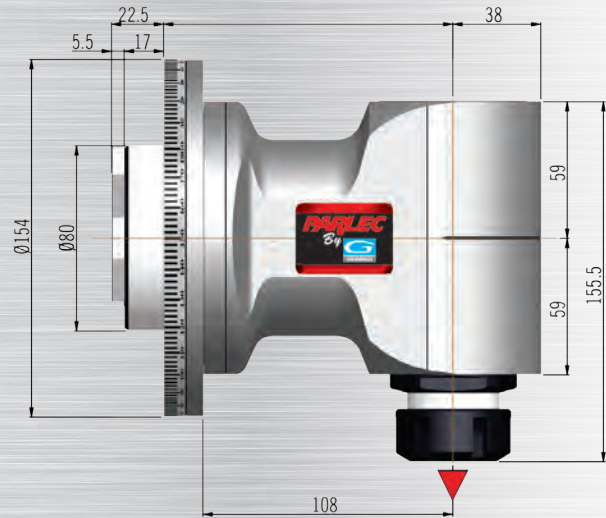
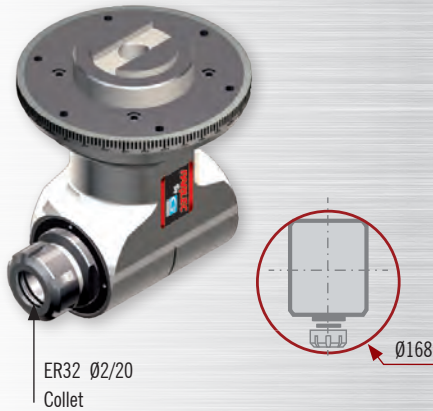
Description	Shank	A	Projection length of Drive Shank	Weight	Spares (Incl.)
F90MTC-16L-C50	CAT 50	8.54 (217)*	1.38 (35)	-	Stop Block Wrenches Grease
F90MTC-16L-H100	HSK100A	8.54 (217)*	1.81 (46)	-	Instructions Drive Shank Universal Flange
F90MTC-16L-CTP8	C8 (ISO 26623)	8.54 (217) * * Extension: 100 mm and 200 mm available see page 166	-	-	

Other Shank Options available: C5, and C6 (ISO 26623). Order ER25 Collets separately. See pages 55-61.

Evolution Angle Heads

160 3,500 RPM Manual Tool Change High Torque Milling Series

F90MTC-20



APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 32	1-20 mm	1:1	3,500	328 lbs. (1460 N)	752 in/ lbs. (85 Nm)	None	Opposite Spindle
See next page for Optional Output Shaft: Double ER. Additional Output Shafts available: Weldon, HSK40A, Cpt4, Shell Mill					Configured for optional internal air pressure		

PRODUCT

Description	Shank	A	Projection length of Drive Shank	Spares (Incl.)
F90MTC-20-C50	CAT 50	4.92 (125)*	1.38 (35)	Stop Block Wrenches Grease Instructions Drive Shank Universal Flange
F90MTC-20-H100	HSK100A	4.92 (125)*	1.81 (46)	
F90MTC-20-CTP8	C8 (ISO 26623)	4.92 (125)* * Extension: 100 mm and 200 mm available see page 166	-	

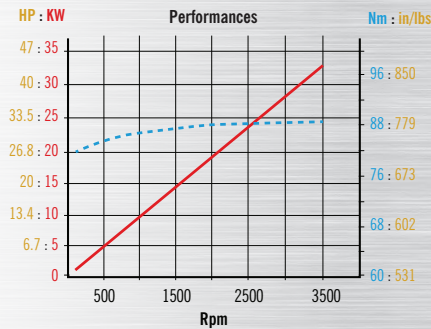
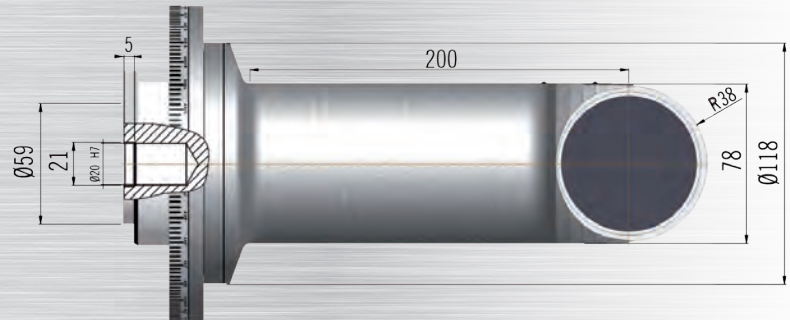
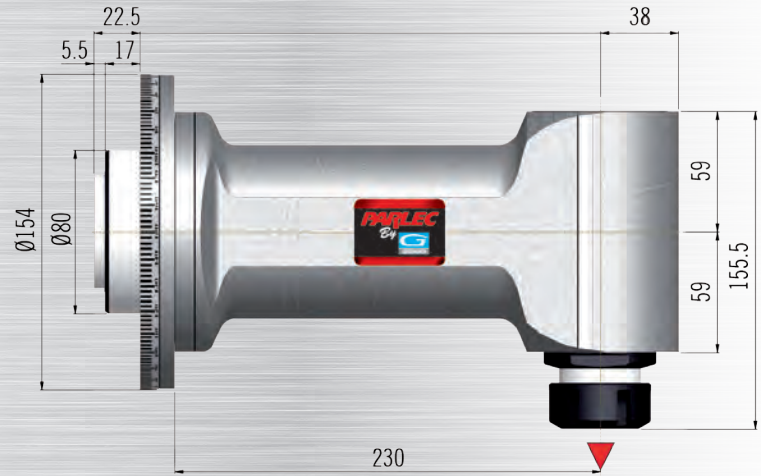
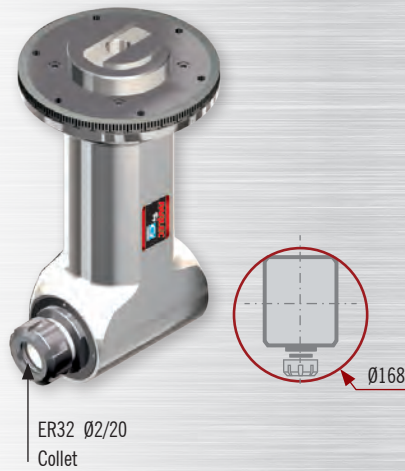
Other Shank Options available: C5, and C6 (ISO 26623). Order ER32 Collets seperately. See pages 55-61.

Evolution Angle Heads

3,500 RPM Manual Tool Change Long High Torque Milling Series

161

F90MTC-20L



APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ER 32	1-20 mm	1:1	3,500	328 lbs. (1460 N)	752 in/ lbs. (85 Nm)	None	Opposite Spindle
See next page for Optional Output Shaft: Double ER. Additional Output Shafts available: Weldon, HSK40A, Cpt4, Shell Mill					Configured for optional internal air pressure		

PRODUCT

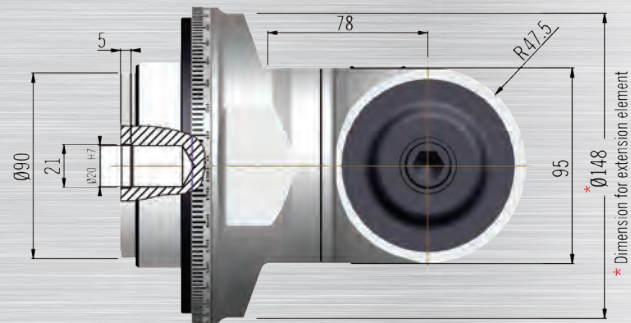
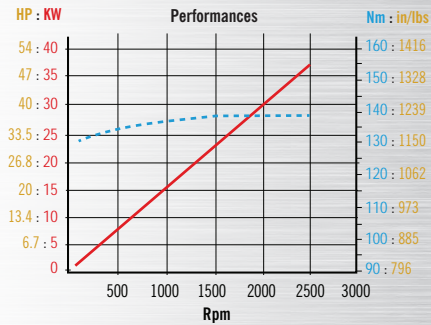
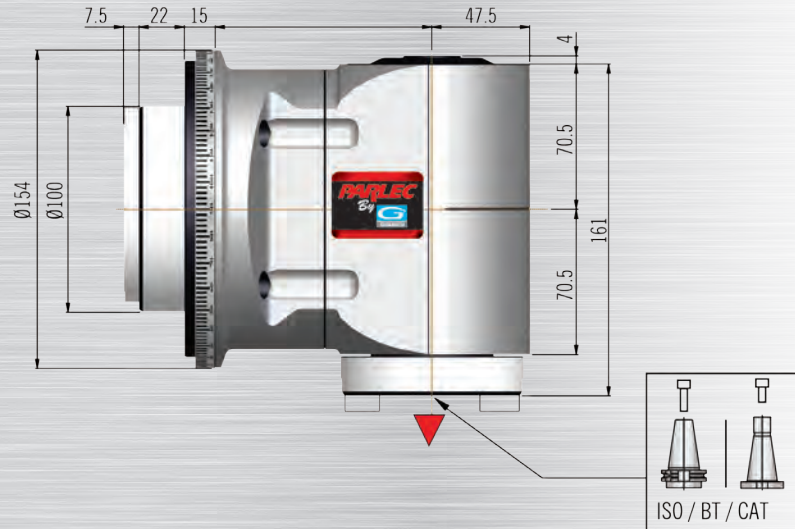
Description	Shank	A	Projection length of Drive Shank	Spares (Incl.)
F90MTC-20L-C50	CAT 50	9.72 (247)*	1.38 (35)	Stop Block Wrenches
F90MTC-20L-H100	HSK100A	9.72 (247) *	1.81 (46)	Grease
F90MTC-20L-CTP8	C8 (ISO 26623)	9.72 (247)* * Extension: 100 mm and 200 mm available see page 166	-	Instructions Drive Shank Universal Flange

Other Shank Options available: C5, and C6 (ISO 26623). Order ER32 Collets separately. See pages 55-61.

Evolution Angle Heads

162 2,500 RPM Manual Tool Change High Torque Milling Series

F90MTC-40



APPLICATION SPECIFICATION

Output Shaft	Range	Ratio	RPM Max	Axial Load Max	Torque	Coolant	Direction
ISO 40	-	1 : 1	2,500	680 lbs. (3020 N)	1196 in/ lbs. (135 Nm)	None	Opposite Spindle
See next page for Optional Output Shaft: Double ER. Additional Output Shafts available: HSK63A, CPT5, ER40					Configured for optional internal air pressure		

PRODUCT

Description	Shank	A	Projection length of Drive Shank	Spares (Incl.)
F90MTC-S40-C50	CAT 50	4.13 (105)*	1.38 (35)	Stop Block Wrenches Grease Instructions
F90MTC-S40-H100	HSK100A	4.13 (105)*	1.81 (46)	
F90MTC-S40-CTP8	C8 (ISO 26623)	4.13 (105)* *Extension: 100 mm and 200 mm available see page 166	-	

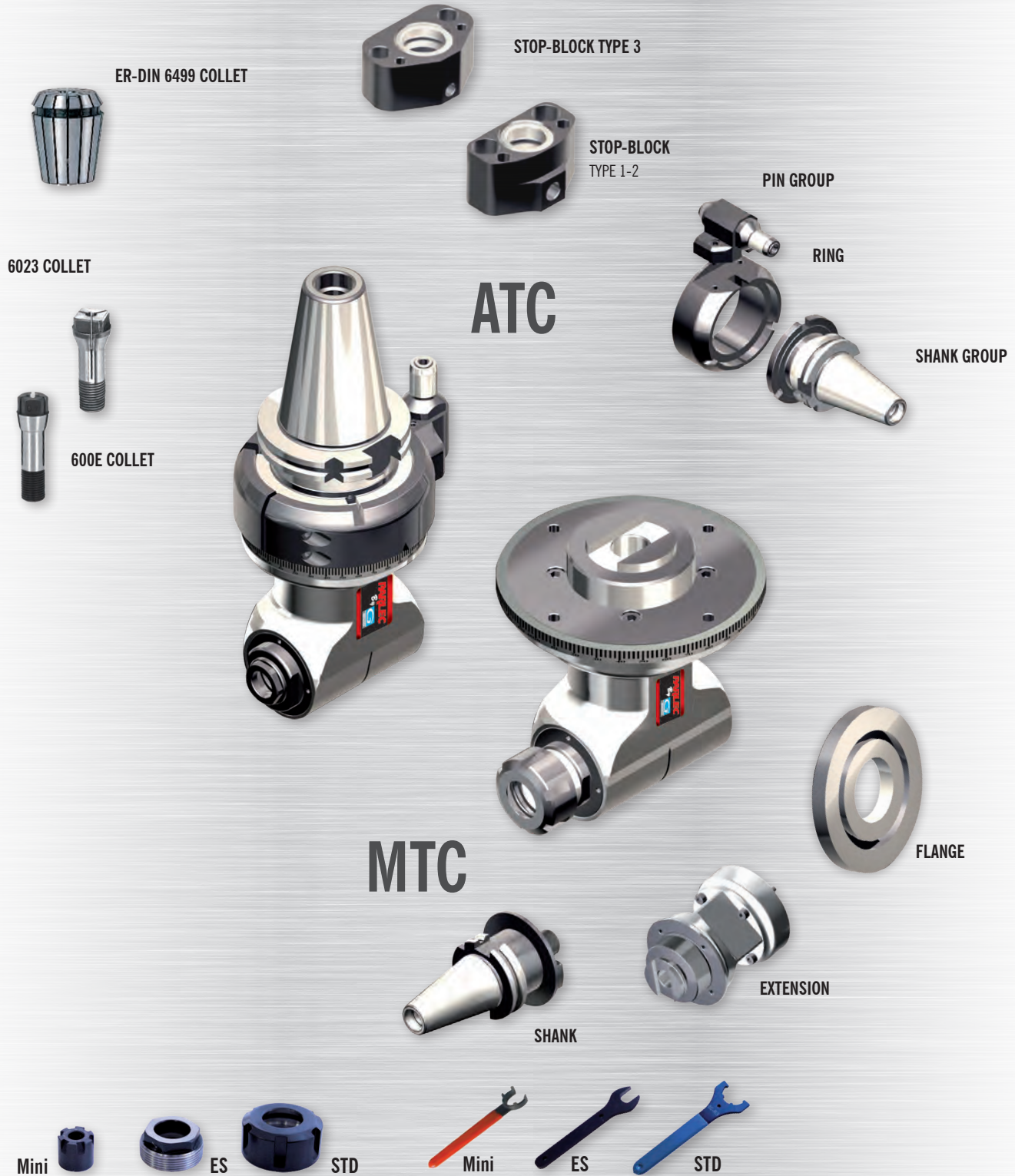
Other Shank Options available: C5 and C6 (ISO 26623).

Evolution Angle Heads

3,500 RPM Manual Tool Change Long High Torque Milling Series

163

ATC & MTC SERIES *Evolution Line* ACCESSORIES



Evolution Angle Heads

164 Collets



SPARE NUTS AND WRENCHES

Angle Head	Nut Style	Part Number	Nut Wrench	Output Shaft Wrench
FS90-3			5.5 mm Hex	
FS90-3L				
FS90-4			7 mm Hex	
FS90-4L				
F90-07	ER11-ES	9.ER.110ES	13 mm Hex	22 mm Hex
F90-07L				
F90-10	ER16-ES	9.ER.160ES	19 mm Hex	30 mm Hex
F90-10L				27 mm Hex
FMU-10				
FR90-10				
F90-16S	ER25-STD	25ERN	25ERNW	32 mm Hex
F90-16	ER25-ES	9.ER.250ES	27 mm Hex	38 mm Hex
F90-16L				36 mm Hex
FR90-16				
FMU-16	ER25 Mini	9.ER.2500M	9.CH.2500M	27 mm Hex
F90-20	ER32-STD	32ERN	32ERNW	47 mm Hex
FMU-20	ER32-STD	32ERN	32ERNW	40 mm Hex
FR90-20	ER32-ES	9.ER.320ES	32 mm Hex	47 mm Hex
F90-30D	ER40-STD	40ERN	40ERNW	

COLLETS 6023E AND 600E

Part Number	Type	Size
9.60.23E00/1.0	6023E	1 mm
9.60.23E00/1.5		1.5 mm
9.60.23E00/2.0		2 mm
9.60.23E00/2.5		2.5 mm
9.60.23E00/3.0		3 mm
9.60.0E000/1.0	600E	1 mm
9.60.0E000/1.5		1.5 mm
9.60.0E000/2.0		2 mm
9.60.0E000/2.5		2.5 mm
9.60.0E000/3.0		3 mm
9.60.0E000/3.2		1/8" 3.2 mm
9.60.0E000/3.5		3.5 mm
9.60.0E000/4.0		4 mm

ER COLLET SELECTION

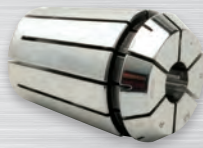
<p>ER STANDARD COLLET (ER Standard Collets see page 55-56)</p>	<ul style="list-style-type: none"> For use in ER collet chucks for drilling, reaming, boring, tapping, and milling. Meets DIN 6499-B industry standard. Collapse range .0393"(1 mm) maximum. Size 11 collapse range .020"(1/2 mm) maximum. For higher runout tolerance use HIGH CONCENTRICITY GRADE AA, 5 Micron COLLETS
<p>ER TAP COLLETS (ER Tap Collets see page 61)</p>	<ul style="list-style-type: none"> Designed for use with production ER Tapping tools. Provide maximum concentricity with positive driving force.
<p>ER AA GRADE 5 MICRON COLLET (ER AA Grade 5 Micron Collets see page 57-58)</p> <p>HIGH CONCENTRICITY >>></p>	<ul style="list-style-type: none"> Evenly distributed cutting edges for high performance machining. .0002" (5 micron) gage tolerance. Exceeds DIN requirements. Recommended use on size. 12 slots, deburred and polished. Increased grip force with reduced friction to collet seat. Improve system performance and lower cost per piece when used with a quality chuck.

ER COLLET SELECTION WITH COOLANT OPTIONS

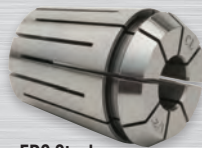
<p>ERS STEEL SEALED COLLET (ER Steel Sealed Collets see page 59-60)</p>	<ul style="list-style-type: none"> For use with regular straight shank tools. Withstands coolant pressure up to 1,800 psi. Collet collapse is .005."
<p>COOLANT NUT SEAL SYSTEM (Coolant Nut Seals see page 60) (Coolant Nuts see page 62)</p>	<ul style="list-style-type: none"> Allows full range of collet when used with standard collets. Allows coolant seal with grade AA, 5 Micron collets. Prevents abrasive machining dust of chips from contaminating collet system. Seals up to 1,200 psi.



ER Standard Collet



ER AA Grade 5 Micron Collet



ERS Steel Sealed Collet



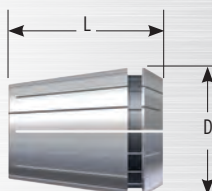
ER Tap Collet



Coolant Seal



Collet Nuts



ER COLLET SIZE

	ER11	ER16	ER20	ER25	ER32	ER40
LENGTH (L)	0.708	1.082	1.240	1.338	1.574	1.811
DIAMETER (D)	0.452	0.669	0.827	1.023	1.300	1.614

Evolution Angle Heads

166 Anti-Rotation



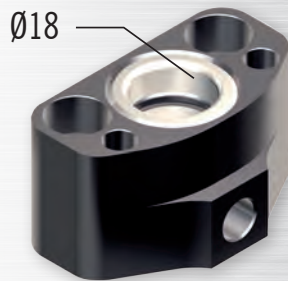
ANTI-ROTATION GROUP

Model	Standard Group	Available Shanks	A	D	H	Option H	Pin Size	Optional Pin Size
FS90-3	TYPE 1		1.65 (41.75)	4.02 (102)	2.559 (65)	3.149 (80) 4.330 (110)	18 mm	28 mm with 110 mm H only
FS90-3L								
FS90-4		Cat 40, 50						
FS90-4L		DIN (SK) 40, 50						
F90-07		BT 40, 50						
F90-07L		HSK A 63, 80, 100						
F90-10		KM 63, 80, 100						
F90-10L		ISO 26623 C5, C6, C8						
FMU-10								
FR90-10								
F90-16S								
FMU-16		KM 80,100						
F90-16		Type 2						
F90-16L	BT 50							
FR90-16	HSK A 80, 100							
F90-20	ISO 26623 C6, C8							
FMU-20	Type 3	Cat 50	-	6.18 (157)	4.330 (110)	-	28 mm	-
-		BT 50						
FR90-20		HSK A 80, 100						
-		KM 80,100						
F90-30D*		ISO 26623 C6, C8						

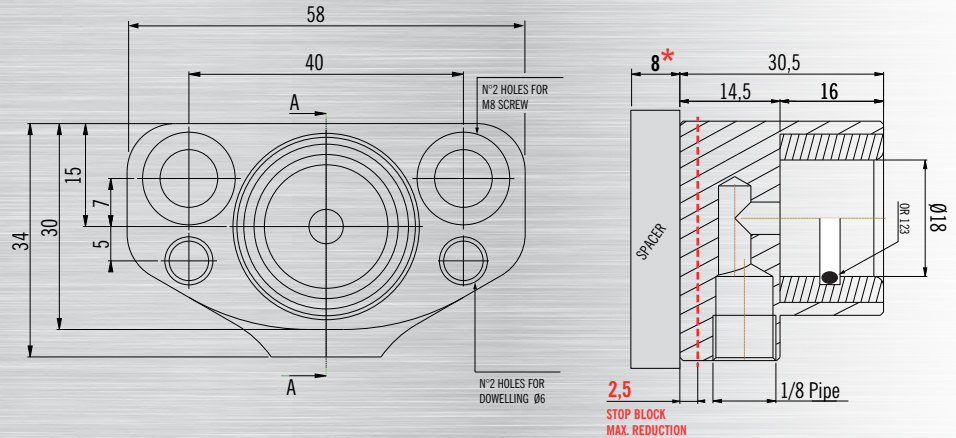
* Type 2 available on request

Evolution Angle Heads

STOP-BLOCK TYPE 1-2



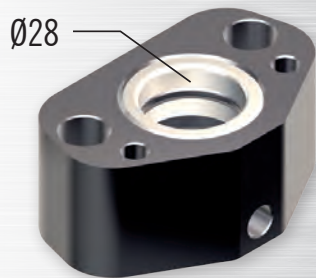
Standard stop block provided with each head.



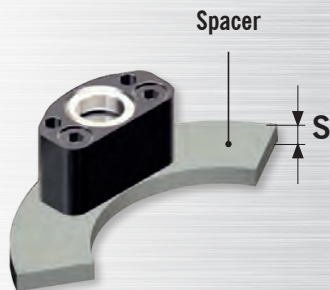
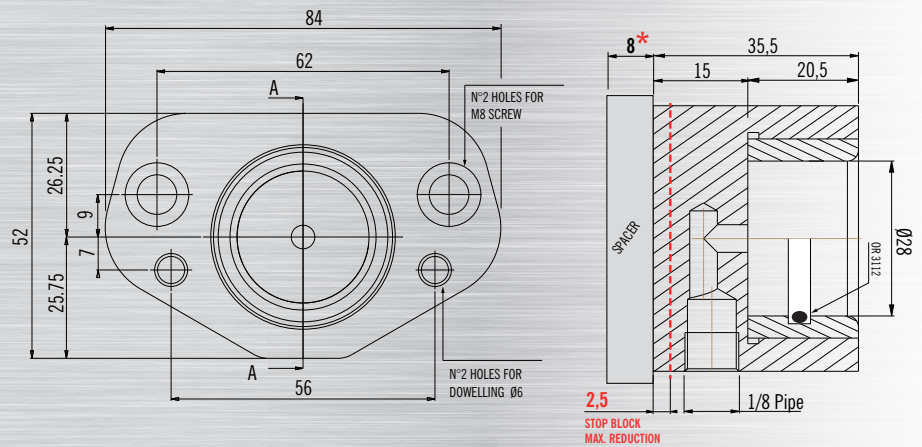
NOTE 1: * 8 mm spacer thickness is reference only. Please refer to following pages for application calculations.

STOP-BLOCK TYPE 3

For Angle Heads type F90-S40 / F90-S40-70BAR 7 FMU 20



Standard stop block provided with each head.



Elliptical Positioning Pin allows for single or multiple head applications

Note 2: Optional spacer is not provided. "S" thickness is for reference only. Actual thickness, and/or the need for a spacer can be calculated on the following pages.

Evolution Angle Heads

CHECK SUITABILITY OF THE MACHINE TOOL SPINDLE TO MOUNT A STOP BLOCK.

If stop block is already mounted on the machine tool.

1. Check the bushing diameter in the stop block (18mm or 28mm)
2. Calculate the "A" dimension based on the shank choices in the chart.
Note "B" is calculated from Spindle Gauge Line

If no stop block is mounted on the machine spindle.

1. The standard positioning pin is OK and it will be necessary to make a spacer if dimension X is larger than the values indicated in table 1.
2. The positioning pin must be shortened if dimension X is (Incl.) between values indicated in table 1 (Max shortening 8mm with angle heads type 1 & 2, Max 6,5mm with angle heads type 3).
3. It will be necessary for a special positioning pin if dimension X is less than the values indicated in table 1.

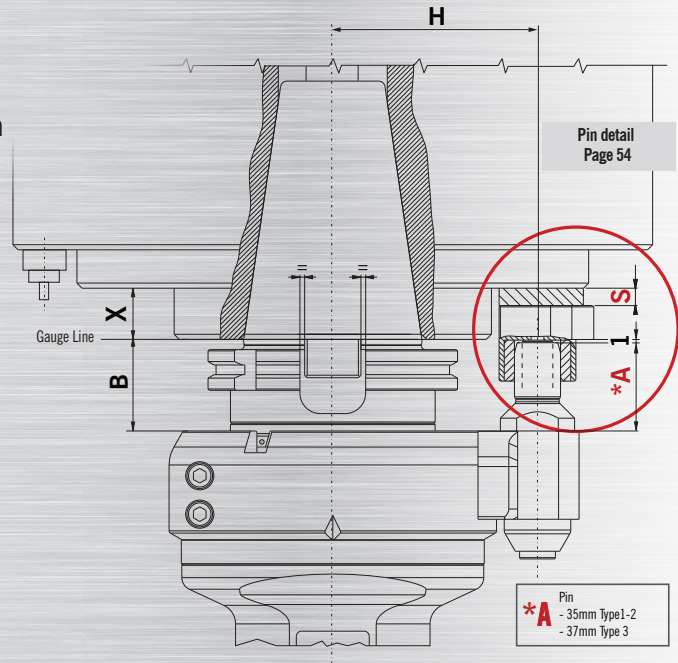


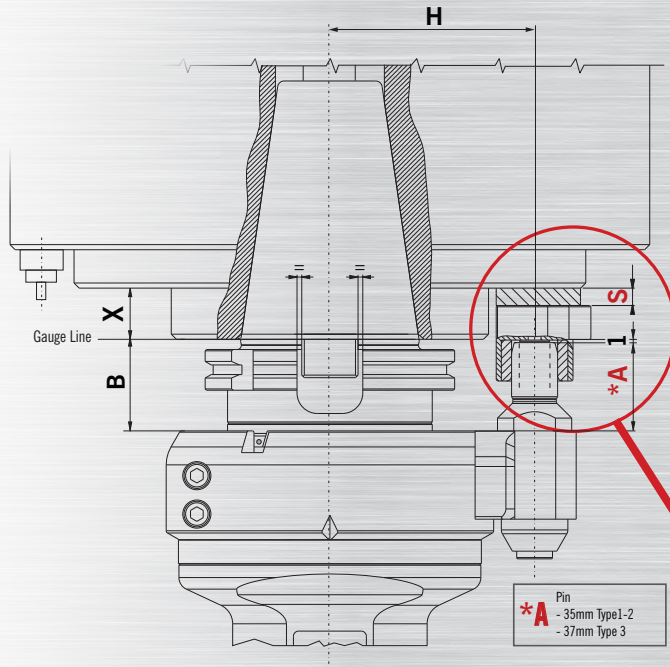
TABLE 1 - STANDARD 35 MM (TYPE 3 = 37 MM)

SHANKS	B	X	"S" CALCULATION FOR SPACER THICKNESS			SHORTENED S = 8 MM		SPECIAL	
			H	S	X	"A" HEIGHT PIN CALCULATION	X		
SK-CAT-BT30 SK-CAT-BT40 SK-CAT50	35	$X \geq 23,5$ mm	$H = 65/80/110 - \varnothing 18$	$S = X - 15,5$ mm	$24 > X > 16,5$ mm	$A = (X+B) - 23,5$	$X < 16,$		
	37	$X \geq 24$ mm	$H = 110 - \varnothing 28$	$S = X - 16$ mm		$A = (X+B) - 24$			
BT50	43	$X \geq 15,5$ mm	$H = 65/80/110 - \varnothing 18$	$S = X - 7,5$ mm	$16 > X > 8,5$ mm	$A = (X+B) - 23,5$	$16 > X > 8,5$ mm		
	45	$X \geq 16$ mm	$H = 110 - \varnothing 28$	$S = X - 8$ mm		$A = (X+B) - 24$			
HSK-63	44	$X \geq 14,5$ mm	$H = 65/80/110 - \varnothing 18$	$S = X - 6,5$ mm	$15 > X > 7,5$ mm	$A = (X+B) - 23,5$	$15 > X > 7,5$ mm		
		$X \geq 15$ mm	$H = 110 - \varnothing 28$	$S = X - 7$ mm		$A = (X+B) - 24$			
HSK-80 HSK-100	46	$X \geq 12,5$ mm	$H = 80/110 - \varnothing 18$	$S = X - 4,5$ mm	$13 > X > 5,5$ mm	$A = (X+B) - 23,5$	$13 > X > 5,5$ mm		
		$X \geq 13$ mm	$H = 110 - \varnothing 28$	$S = X - 5$ mm		$A = (X+B) - 24$			

See spacer calculation example Page 187

Evolution Angle Heads

CHECK SUITABILITY OF THE MACHINE TOOL SPINDLE TO MOUNT A STOP BLOCK.



Pin	"H" Pitch	Ø Max
Ø18	65	Ø99
	80	Ø129
Ø28	80	Ø106
	110	Ø166

ATTENTION!

The calculation for the location of the stop block must be done to allow 1 mm of free play remaining in the release pin travel. This will insure that the anti-rotation system is free to rotate without deflection caused by fixed length anti-rotation pin contact of the bottom of the stop block.

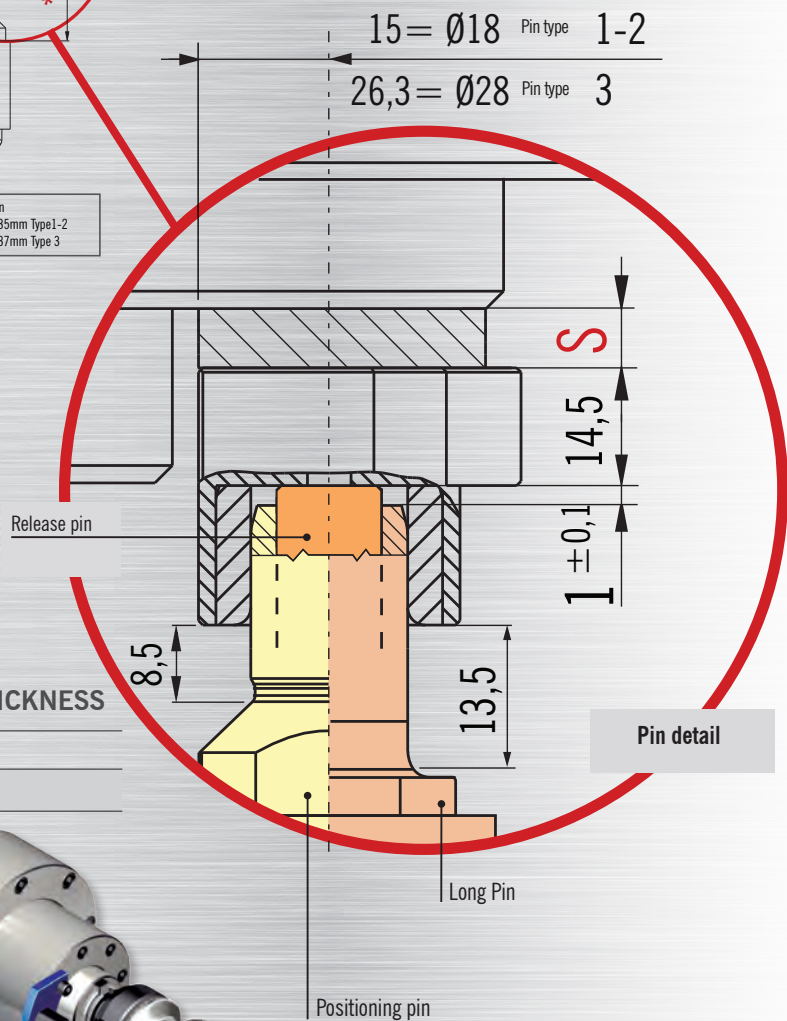
EXAMPLE OF CALCULATION FOR SPACER THICKNESS

X = 23,5 mm	B = 35 mm (SK40)
$S = X (23,5) - 15,5 = 8$	

N.B:

23,5 is also the minimum X to use the standard pin



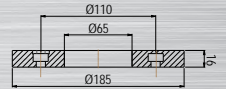
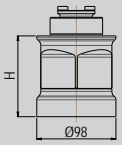


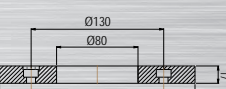
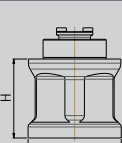


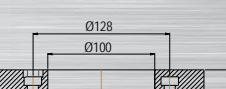
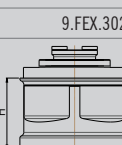

8 is the spacer thickness



Evolution Angle Heads

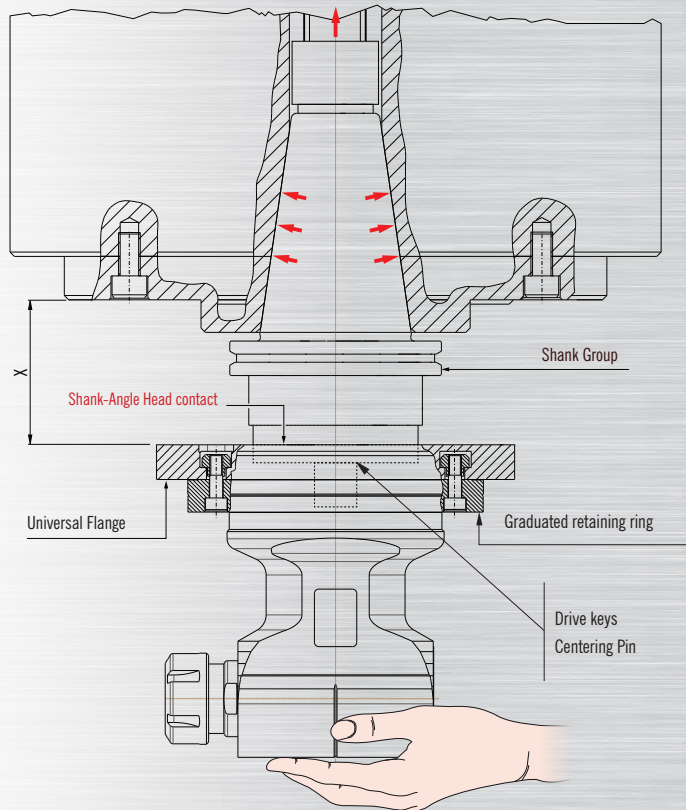
170 MTC Accessories



ANGLE HEADS		SHANK GROUP		FLANGE		EXTENSION	
MODEL	TYPE	Cod.	DRAWINGS	Cod.	H	Cod.	
F90-16S	1	9.SK30.MTC	  <p>SK DIN 69871</p> <p>CAPTO ISO 26623</p>	 <p>9.FL.F90T1</p>	100	9.FEX.10100	
		9.SK40.MTC			200	9.FEX.10200	
		9.SK50.MTC					
		9.CT40.MTC					
		9.CT50.MTC					
F90-16L F90-20	2	9.BT40.MTC	  <p>CAT ANSI B5.50</p> <p>KM</p>	 <p>9.FL.F90T2</p>	100	9.FEX.20100	
		9.BT50.MTC			200	9.FEX.20200	
		9.HSK63.MTC					
		9.HSK80.MTC					
		9.HSK100.MTC					
F90-S40	3	9.C5.MTC	  <p>BT</p> <p>ISO DIN 2080</p>	 <p>9.FL.F90T3</p>	100	9.FEX.30100	
		9.C6.MTC			200	9.FEX.30200	
		9.C8.MTC					
		9.KM63.MTC					
		9.KM80.MTC					
F90-S50	4	9.KM100.MTC	 <p>HSK DIN 69893</p>	<p>9.FL.F90T4</p>	300	9.FEX.40300	<p>-</p>
		9.208040.MTC					
		9.208050.MTC					

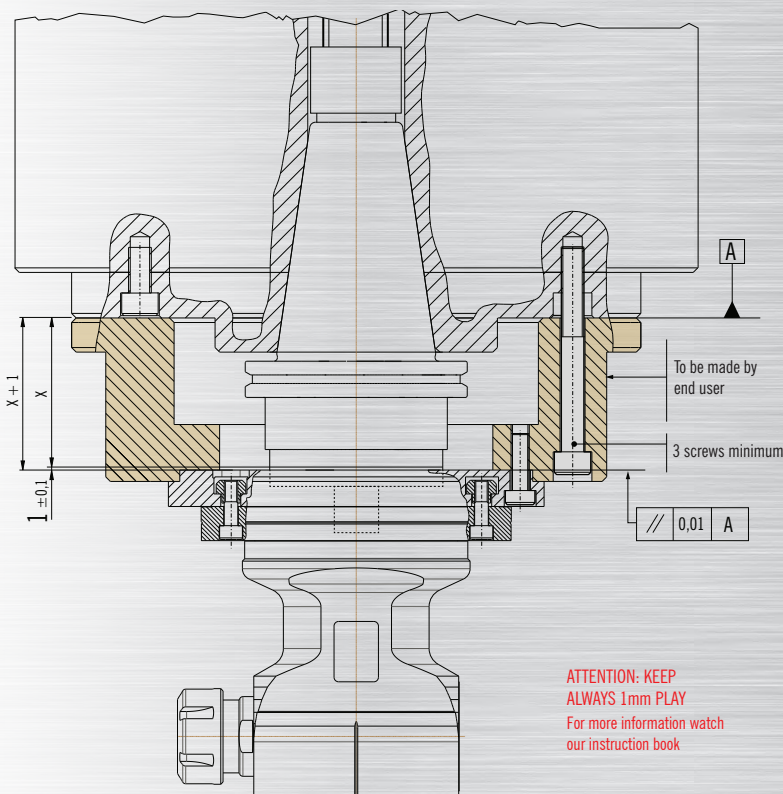


Evolution Angle Heads



STEP 1

- Assemble the shank on the machine through the machine spindle
- Assemble the universal flange on the head
- Position the head ensuring the contact shank-angle head body
- Check dimension "X"



STEP 2

- Make a spacer with $X + 1$ mm thickness to be mounted between universal flange and machine spindle
- Use 3 screws minimum

ATTENTION: KEEP ALWAYS 1mm PLAY
For more information watch our instruction book

Evolution Angle Heads

172 Quotation Request Sheet

QUOTATION REQUEST SHEET

CONTACT INFORMATION

For quick response, just photocopy this page, complete all information (please include Part Print where appropriate) and simply FAX back to Parlec at 1-800-866-5917

Date _____

*Email _____

*Name _____

*Company _____

Address _____

City _____

Province _____

Zip Code _____

*Country _____

Phone _____

*Activity:

- End User
- Distributor
- Machine Builder
- Machine Tool Dealer

MACHINE INFORMATION

Machine Make _____

Machine Model _____

*Tool Changer: Automatic Flange Mount

*Tool Changer Weight Capacity: kg _____

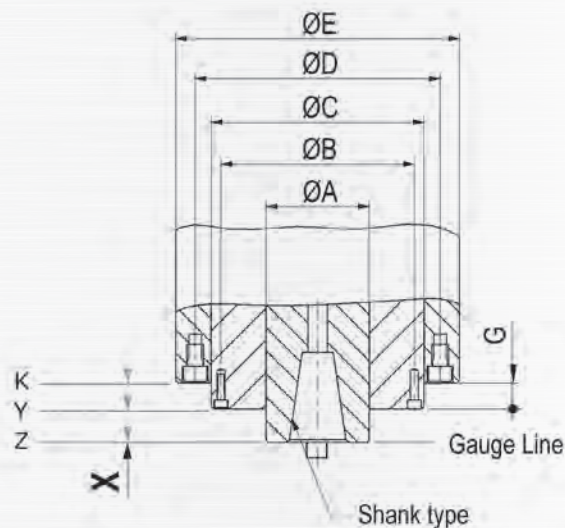
Choose a surface for stop block: K Y Z

X= _____

Distance between gauge line and surface for stop-block

ØA: _____ ØB: _____ ØC: _____

ØD: _____ ØE: _____ G: _____



APPLICATION INFORMATION

Application: Milling End Mill Diameter and Flute: _____ Drilling & Tapping

Material: _____ Hardness: _____

RPM: _____ Feed Rate: _____ Depth of Cut: _____ Width of Cut: _____

Notes: (For a thorough study of the application send: drawing of the part to work, drawing tool, etc...)

QUOTATION REQUEST SHEET

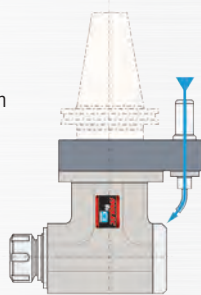
ANGLE HEAD INFORMATION

*Head Style: Fixed 90° 0°-90° Adjustable Special Fixed Angle Dual Output Automatic Tool Change Flange Mount

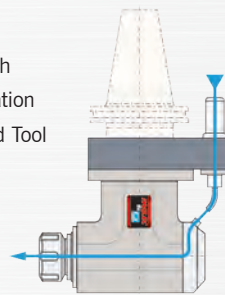
*Output Toolholder: _____ *Dimension: _____

Internal Coolant Required Pressure: _____

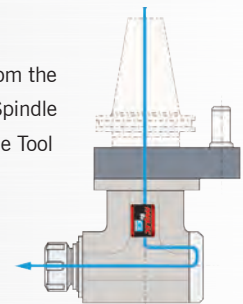
Through Orientation Pin



Through Orientation Pin and Tool



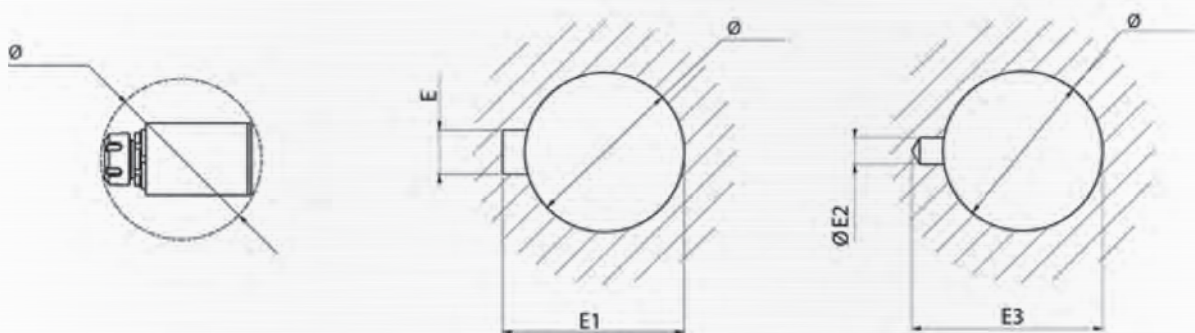
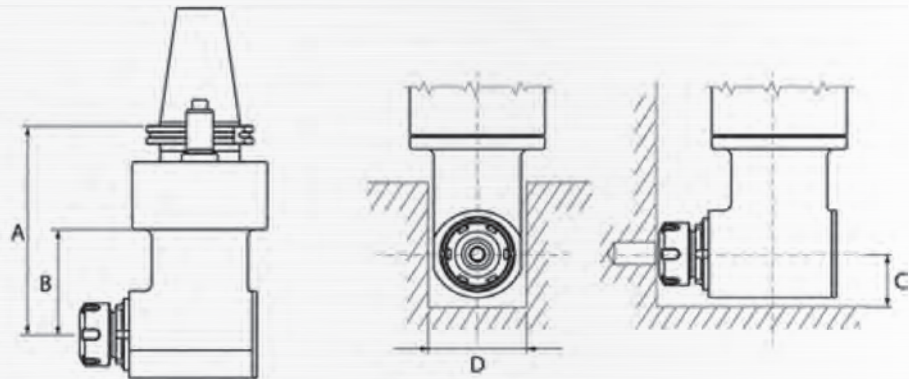
Directly from the Machine Spindle through the Tool



ANGLE HEAD DIMENSIONS

A: _____ B: _____ C: _____ D: _____

E: _____ E1: _____ E2: _____ E3: _____



Notes

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TAPPING HOLDERS:

- Heads for Synchronous and traditional tapping cycles
- Numertap® 770 system for best durability and range
 - Tradition Bilz type
 - Extended reach adapters
 - Coolant and coolant groove
- Collet and Universal Drive adapters
- ANSI, DIN, JIS and ISO shank tap shanks

Tapping Selection

Synchronous

With the advent of 32 bit microprocessors, modern machine tools have the capability of synchronizing the spindle rotation and spindle feed. This has made it possible to eliminate the spring compression and tension stroke utilized in traditional tapping heads. The advantage that this brings to threading is the speed the cycle can operate. The cost of building tapping heads has also been reduced by the elimination of the axial float mechanism.

Radial float is still a very important component of your threading operation. The absence of radial float will restrict the tap's ability to follow the drilled hole. The lack of radial float will force the tap to flex to meet the hole, or to cut like a mill, causing premature tap wear.

Parlec offers many solutions for synchronous tapping cycles. We recommend the use of our tension only tapping heads. This system will allow the tap to hard start, has radial float, a tension stroke to compensate for any spindle over rotation, and quick change of tap adapters. Any Parlec TA style tapping head can be adjusted or purchased as a tension only (TT). Parlec offers TR (tapping rigid) or FS (fixed shank) tapping heads in all of our non-torque controlled systems. These units have no tension or compression stroke but do offer radial float and quick change tap adapters. In addition, Parlec offers ER style tap collets with no float, and with tension and float. These are available to use with standard ER collet chucks and with ER tap collet adapters. (Use with a NUMERTAP® collet adapter provides radial float).

Tension & Compression

Tension and compression tapping heads have been the main stay of machine tool tapping for many years. Parlec offers a wide range and style of these heads. We offer the widely used BILZ-style as well as the rugged NUMERTAP® systems. Identified as (TA) in the part number.

Torque Control

Torque control tapping is still the best solution for protecting your taps and work pieces from tap breakage. Bottom tapping or close blind hole tapping where chip evacuation is a concern, are prime operations for torque control tapping. Parlec offers torque control tapping from #4 through 1". Refer to the following pages for more detailed information: NUMERTAP® 80, 700 and BILZ-style 1,2, and 3 with torque-controlled adapters.

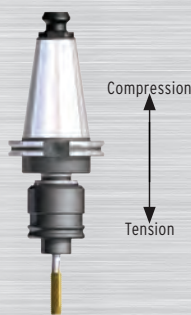
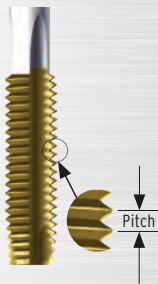
Rigid

ER tap collets are available for use with NUMERTAP® adapters as well as with standard collet chucks. Loss of radial float will result with use in standard collet chucks. Poor tap life and thread quality may result. Parlec tapping units are also available as rigid or fixed shank units (TR, FS). These units provide radial float and quick-change adapters but are rigid in the axial stroke. Unlike standard collet chuck systems, they will still yield the benefits of quick change and radial float.

Tapping Selection

Axial Feed

A thread is an inclined plane that is rolled into a cylinder. The distance between a point on the plane and the point directly above is the pitch of the thread. To cut a good thread the tap must be fed into the work piece precisely on pitch. This makes a tap the only tool in metalworking in which the feed rate and the speed must be perfectly synchronized. For each revolution the tap must advance the pitch. Retarding the tap's advance or pushing the tap will result in an incorrect thread form.



Tension Stroke

The tap is a precision ground cutting tool. To allow the tap to cut on pitch, NUMERTAP® tapping attachments feature a free floating tension stroke. When properly applied, the feed rate of the machine is slightly less than the pitch. The tension stroke in the NUMERTAP® will allow the tap to pull itself into the work piece exactly on the pitch of the tap. This insures that the threads will gage properly.



Torque Control

A tap in one revolution must advance the pitch. If the tap is at the bottom of the hole or chip build-up blocks the hole and an effort is made to rotate the tool, catastrophic failure will result. The tool will break because there is no room to advance. To prevent this problem when tapping blind holes, select NUMERTAP® units 80 and 700, featuring torque control. Torque control tapping heads feature tension and compression strokes and perform best when programmed to underfeed. Refer to programming information in the back of this section.



Radial Float

Radial Float allows for misalignment between the machine spindle and the hole to be tapped. It also allows the tap to follow a drilled hole, reducing tap flank rub. This is included with all Parlec tapping heads.

Tension Only (Synchronous & Depth Control)

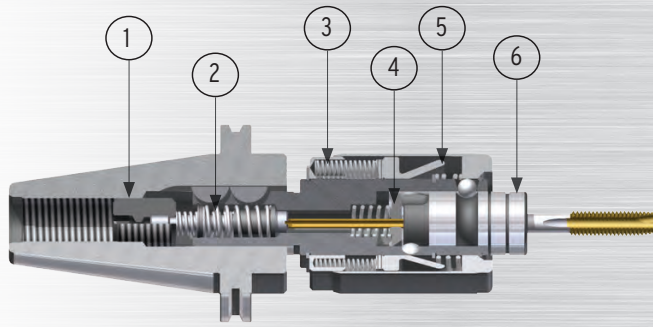
The NUMERTAP®, 100, 200, 300, and 770 units can be purchased as tension only units. (TT). Tension only is the best solution for synchronous tapping. The tension stroke will not affect the cycle during its normal operation but will add a safety margin for tap elongation or spindle over-rotation. In a normal tapping cycle, tension only will improve thread depth control by creating a positive start system.

Axial Compression

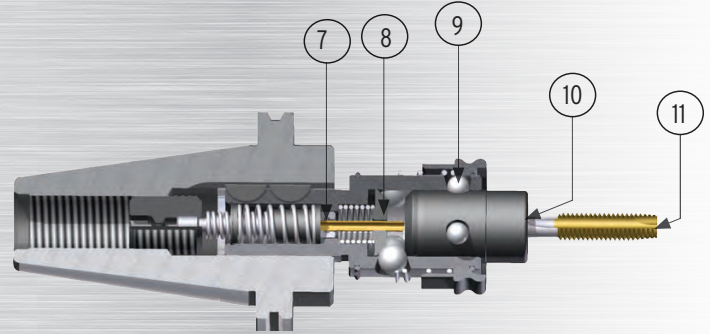
The compression stroke cushions the tap as it enters the work piece. This feature also allows holes to be retapped. This is particularly helpful when setting up a job. The compression stroke is adjustable from .000" to .250" to maximize depth control. Refer to next page.

Tapping Selection

178 Numertap®



Numertap C50-70TA5, Torque controlled, non-coolant



Numertap C50-77TA4C, Positive Drive, Coolant-Fed

① Adjustable Length Compensation

Available on all 700/770 and Bilz-style tapping attachments with machine tapers.

② Tension & Compression

Tap position returns +/- .001 after each cycle. Standard with all tapping attachments. Also available as tension only or rigid for synchronous tapping.

③ Torque Spring

Torque is controlled by spring pressure. This is standard on 80 and 700 units.

④ Torque Drive Ball

Standard on 80 and 700 torque controlled systems. Scallop size on the adapter pre-calibrates torque setting.

⑤ Torque Sleeve

Automatically controls the amount of torque transmitted to the adapter. Makes torque adjustments unnecessary.

⑥ Tap Adapter, Non-Coolant

Available for all standard tap sizes. Square drive ensures positive tap drive.

⑦ Coolant Feed Tube

Feeds coolant directly to the tap. Keeps coolant from contaminating the attachment's internal components. Restrictor allows for up to 800 PSI.

⑧ Seals in Coolant Fed Adapters

Keeps coolant from back feeding into attachments

⑨ Retention Ball

Retains adapter in the attachment while maintaining quick release during changeover. Acts as drive ball for positive drive adapters.

⑩ Coolant Groove

Feeds coolant along the tap shank. Reduces the need for expensive coolant through taps.

⑪ Coolant-Through

Feed from coolant through taps.

Quotation Request Sheet

QUOTATION REQUEST SHEET

Contact Information

For quick response, just photocopy this page, complete all information (please include Part Print where appropriate) and simply EMAIL back to Parlec at sales@parlec.com or FAX at 1-844-269-8819

Company _____		Distributor _____	
Contact Name _____		Title _____	
Business Address _____	City _____	State _____	Zip _____
Phone _____	Fax _____	Email _____	

TAPPING SPECIFICATIONS

Machine Taper _____	Thread Size _____
Tap Shank: <input type="checkbox"/> ANSI (US Inch) <input type="checkbox"/> DIN 371 <input type="checkbox"/> DIN 376	Shank Diameter _____ Shank Square _____
Shank Diameter _____ Shank Square _____	Coolant Preference: <input type="checkbox"/> None <input type="checkbox"/> Thru Tap <input type="checkbox"/> Coolant Groove
Tap Size Range: _____ To _____	Machine Coolant Pressure _____
Tap Cycle Preference: <input type="checkbox"/> Traditional <input type="checkbox"/> Synchronous	Collet Style: <input type="checkbox"/> Tap Collet (Square) <input type="checkbox"/> Universal
Extended Reach: <input type="checkbox"/> None <input type="checkbox"/> 3 Inch <input type="checkbox"/> 6 Inch	

ANSI SIZE

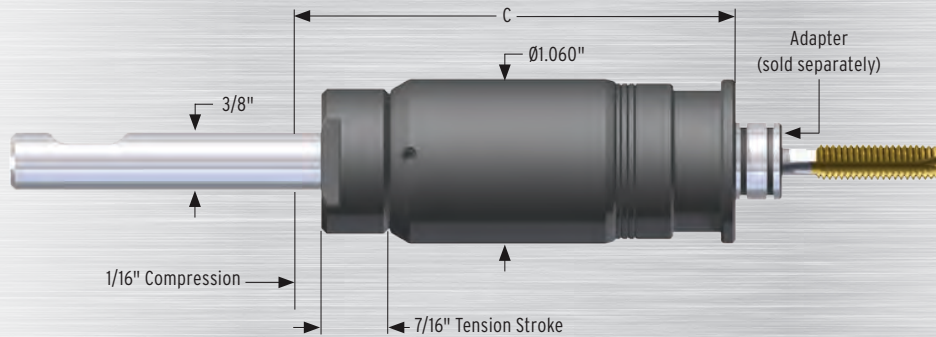
Shank	Square	Inch	NPT	STI	ANSI Metric	Metric (ISO, JIS, DIN)	ERT Tap Collets	Collets	ER11 Collets
.098	.083	-	-	-	-	M1 - M1.8 (D371), M3.5 (D376)	-	ERXX-0118	ER11-0118
.110	.083	-	-	-	-	M2 - M2.6 (D371), M4 (D376)	-	ERXX-0118	ER11-0118
.138	.106	-	-	-	-	M3 (D371), M4.5-M5 (D376)	ERTDXX-3527	ERXX-0157	ER11-0157
.141	.110	#0, #1, #2, #3, #4, #5, #6	-	#4	-	M1.6, M1.8, M2, M2.2, M2.5, M3, M3.15, M3.5	-	ERXX-0157	ER11-0157
.157	.118	-	-	-	-	M3.5 (DIN 371)	-	ERXX-0196	ER11-0177
.157	.126	-	-	-	-	M3 - M3.5 (JIS)	-	ERXX-0196	ER11-0177
.168	.131	#8	-	-	M4	-	ERTXX-#8	ERXX-0196	ER11-0177
.177	.134	-	-	-	-	M4(D371), M6(D376)	ERTDXX-4534	ERXX-0196	ER11-0196
.194	.152	#10	-	#6	M4.5, M5	-	ERTXX-#10	ERXX-0196	ER11-0196
.197	.157	-	-	-	-	M4-M4.5 (JIS)	-	ERXX-0236	ER11-0216
.217	.169	-	-	-	-	M7 (DIN 376)	-	ERXX-0236	ER11-0216
.217	.177	-	-	-	-	M5 - M5.5 (JIS)	-	ERXX-0236	ER11-0236
.220	.165	#12	-	#8	-	-	ERTXX-#12	ERXX-0236	ER11-0236
.236	.177	-	-	-	-	M6 (JIS)	-	ERXX-0236	ER11-0255
.236	.193	-	-	-	-	M4.5 - M6 (D371), M8 (D376)	ERTDXX-6049	ERXX-0236	ER11-0255
.244	.197	-	-	-	-	M7-M8 (JIS)	-	ERXX-0275	ER11-0255
.255	.191	#14, 1/4	-	#10	M6, M6.3	-	ERTXX-025	ERXX-0275	ER11-0275
.276	.217	-	-	-	-	M7 (D371), M9 - M10 (D376, JIS)	ERTDXX-7055	ERXX-0315	ER11-0275
.312	.234	-	1/16 - 27 1/8 - 27 - Small	-	-	-	-	ERXX-0315	-
.315	.236	-	-	-	-	M11 (JIS)	-	ERXX-0315	-
.315	.244	-	-	-	-	M8 (D371), M11 (D376)	ERTDXX-8062	ERXX-0315	-
.318	.238	5/16	-	1/4	M7, M8	-	ERTXX-031	ERXX-0354	-
.323	.242	7/16	-	-	-	-	ERTXX-043	ERXX-0354	-
.335	.256	-	-	-	-	M12 (JIS)	-	ERXX-0354	-
.354	.276	-	-	-	-	M9 (D371), M12 (D376)	ERTDXX-9070	ERXX-0354	-
.367	.275	1/2	-	3/8	M12, M12.5	-	ERTXX-050	ERXX-0393	-
.381	.286	3/8	-	5/16	M10	-	ERTXX-037	ERXX-0393	-
.393	.315	-	-	-	-	M12 (JIS), M10 (D371)	ERTDXX-1080	ERXX-0393	-
.413	.315	-	-	-	-	M14 - M15 (JIS)	-	ERXX-0433	-
.429	.322	9/16	-	7/16	M14	-	ERTXX-056	ERXX-0433	-
.433	.354	-	-	-	-	M14 (DIN 376)	-	ERXX-0433	-
.437	.328	-	1/8 - 27 - Large	-	-	-	ERTXX-012N	ERXX-0472	-
.472	.354	-	-	-	-	M16 (DIN 376)	ERTDXX-1290	ERXX-0472	-
.480	.360	5/8	-	1/2	M16	-	ERTXX-062	ERXX-0511	-
.492	.394	-	-	-	-	M16 (JIS)	-	ERXX-0511	-
.507	.380	-	-	-	-	-	-	ERXX-0511	-

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

ANSI SIZE

Shank	Square	Inch	NPT	ANSI Metric	Metric	ERT Collets	ER16 - ER40 Collets
0.512	0.394	-	-	-	M17 (JIS)	-	ERXX-0551
0.542	0.406	11/16	-	M18	-	ERTXX-068	ERXX-0551
0.551	0.433	-	-	-	M18 (JIS, D376)	ERTDX-1411	ERXX-0551
0.562	0.421	-	1/4 - 18	-	-	ERTXX-025N	ERXX-0590
0.590	0.442	3/4	-	-	-	ERTXX-075	ERXX-0590
0.591	0.472	-	-	-	M20 (JIS)	-	ERXX-0630
0.630	0.472	-	-	-	M20 (DIN 376)	ERTDX-1612	ERXX-0630
0.652	0.489	13/16	-	M20	-	ERTXX-081	ERXX-0669
0.669	0.512	-	-	-	M22 (JIS)	-	ERXX-0669
0.687	0.515	-	1/2 - 14	-	-	ERTXX-050N	ERXX-0708
0.697	0.523	7/8	-	M22	-	ERTXX-087	ERXX-0708
0.700	0.531	-	3/8 - 18	-	-	ERTXX-037N	ERXX-0708
0.709	0.571	-	-	-	M22 - M24 (D376)	ERTDX-1814	ERXX-0708
0.760	0.570	15/16	-	M24	-	ERTXX-093	ERXX-0787
0.787	0.591	-	-	-	M24 - M25 (JIS)	-	ERXX-0787
0.787	0.630	-	-	-	M27 (DIN 376)	ERTDX-2016	ERXX-0787
0.800	0.600	1	-	M25	-	ERTXX-100	ERXX-0826
0.866	0.709	-	-	-	M30 (DIN 376)	ERTDX-2218	ERXX-0866
0.896	0.672	1 1/16, 1 1/8	-	M27	-	-	ERXX-0905
0.906	0.669	-	-	-	M30 (JIS)	-	ERXX-0944
0.906	0.679	-	3/4 - 14	-	-	-	ERXX-0944
0.984	0.748	-	-	-	M33 (JIS)	-	ERXX-0984
0.984	0.787	-	-	-	M33 (DIN 376)	ERTDX-2520	ERXX-0984
1.021	0.766	1 3/16, 1 1/4	-	M30	-	-	ERXX-1023
1.102	0.866	-	-	-	M36 (DIN 376)	-	ERXX-1063
1.108	0.831	1 5/16, 1 3/8	-	M33	-	-	ERXX-1102
1.125	0.843	-	1 - 11 1/2	-	-	-	ERXX-1141
1.233	0.925	1 7/16, 1 1/2	-	M36	-	-	-
1.260	0.945	-	-	-	M39 - M42 (DIN 376)	-	-
1.305	0.979	1 5/8	-	M39	-	-	-
1.312	0.984	-	1 1/4 - 11 1/2	-	-	-	-
1.417	1.142	-	-	-	M45 - M48 (DIN 376)	-	-
1.430	1.072	1 3/4	-	M42	-	-	-
1.500	1.125	-	1 1/2 - 11 1/2	-	-	-	-
1.519	1.139	1 7/8	-	-	-	-	-
1.575	1.260	-	-	-	M52 (DIN 376)	-	-
1.644	1.233	2	-	M48	-	-	-
1.875	1.406	-	2 - 11 1/2	-	-	-	-
1.894	1.420	2 /	-	M56	-	-	-
2.250	1.687	-	2 1/2 - 8	-	-	-	-

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.



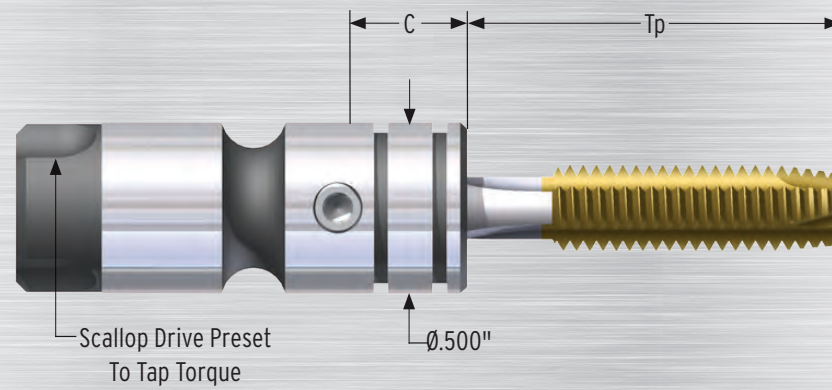
TORQUE-CONTROLLED TAPPING FROM #4 - 1/4" (0-80 IN./LBS.)

- Very sensitive, calibrated torque control prevents tap breakage when bottom tapping.
- Short compression stroke allows holes to be retapped and ensures depth control.
- Rugged alloy steel construction for long trouble-free service life.
- Free-floating ball bearing tension stroke ensures thread size and quality.
- Small outside diameter allows tapping near shoulders without tap extensions.
- Short gage length provides more clearance on vertical machines.
- Quick-change system allows dull taps to be replaced without removing unit from the spindle.
- Radial float improves thread quality and tap life.

Part Number	Shank	C	Approximate Weight
S37-80TA3	3/8 Straight	3.00	9 oz.

Special adapters available to #00. Order adapters separately.

TORQUE-CONTROLLED FOR BOTTOM TAPPING, TENSION AND COMPRESSION ON CNC MACHINES.

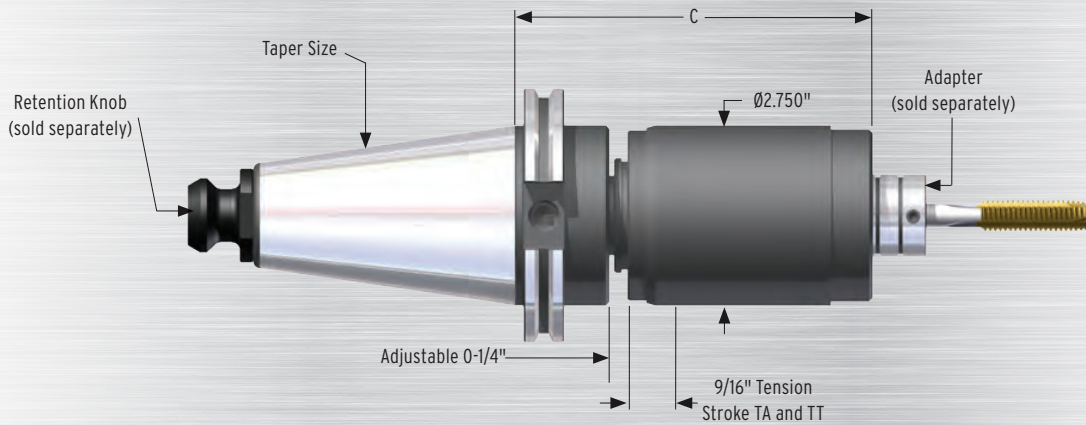


TAP ADAPTERS

- For use in NUMERTAP® 80 Attachments.

Part Number	Tap Size	C	Tp	Metric Tap Size (ANSI)
8401-#4	#4	0.38	0.87	M2.5
8401-#6	#6	0.38	1.00	M3.5
8401-#8	#8	0.38	1.00	M4
8401-#10	#10	0.38	1.18	M5
8401-#12	#12	0.38	1.16	-
8401-025	1/4	0.38	1.25	M6

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.



TORQUE-CONTROLLED TAPPING FROM #6 - 3/4" FERROUS MATERIAL AND #6 - 1" NON-FERROUS MATERIAL

- Large work range eliminates the need to purchase several units.
- Radial float improves thread quality and tap life.
- Precalibrated torque control prevents tap breakage when bottom tapping.
- Free-floating tension stroke ensures thread size and quality.
- Adjustable compression stroke ensures depth control.
- Rugged alloy steel construction for long trouble-free service life.
- Through-spindle coolant option available gets coolant into the hole and flushes chips.
- Quick-change system allows taps to be quickly exchanged.

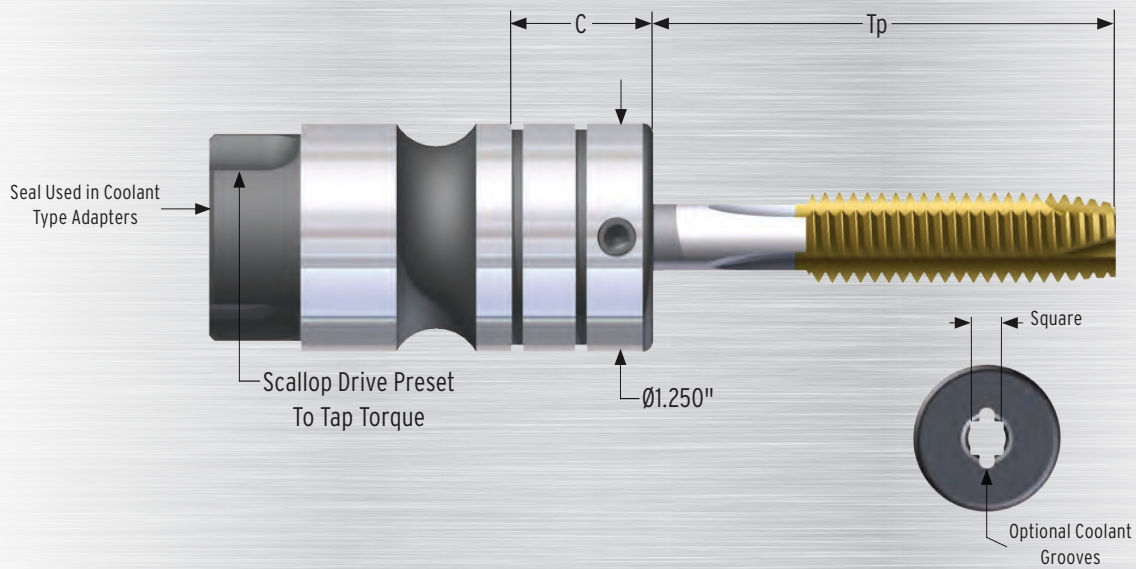
Part Number	Part Number with Coolant Fed	Shank	C	Approx. Weight
B40-70TA5	-	BT40	5.90	7 lbs.
	C40-70TA5C	C40	6.28	7 lbs.
	C50-70TA5C	C50	5.46	11 lbs.

Other sizes available upon request. Coolant-through for up to 250 lbs. of pressure.

CAPACITY

Ferrous	Non-Ferrous	Positive Drive Capacity
#10 - 3/4	#10 - 1	#6 - 1 5/8
1/1 - 1/2 NPT	1/16 - 1/2 NPT	1/16 - 1 1/4 NPT
M5 - M20	M5 - M25	M3.5 - M33

TORQUE-CONTROLLED FOR BOTTOM TAPPING, TENSION AND COMPRESSION ON CNC MACHINES.



TAP ADAPTERS

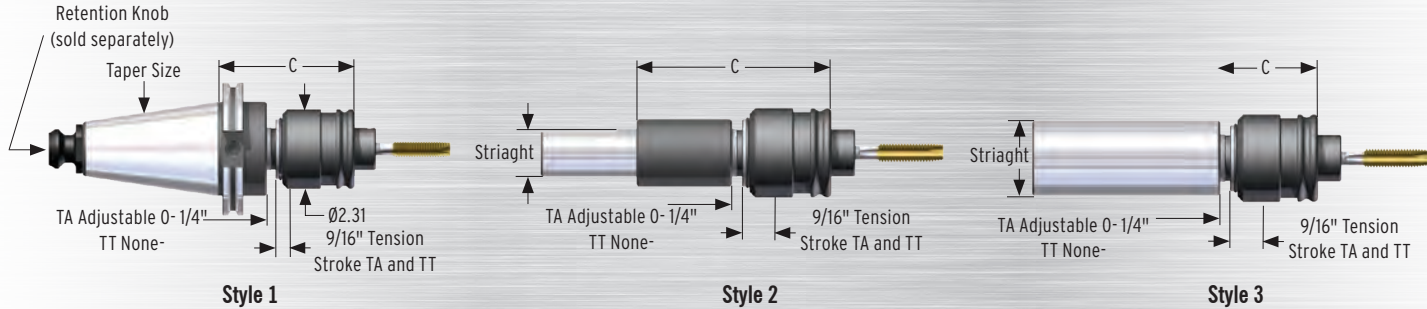
- For use in NUMERTAP® 700 attachments
- Coolant Groove adapters must be used when coolant is fed through Numertap® attachments
- For coolant through taps order 7711C-xxx adapters

Part Number	Coolant Groove	Tap Size*	Metric Tap Size (ANSI)	Tp	Shank	Square
7711-#6	7711CG-#6	#6	M3.5	0.94	0.141	0.110
7711-#8	7711CG-#8	#8	M4	1.00	0.168	0.131
7711-#10	7711CG-#10	#10	M5	1.37	0.194	0.152
7711-#12	7711CG-#12	#12	-	1.34	0.220	0.155
7711-025	7711CG-025	1/4	M6	1.44	0.255	0.191
7711-031	7711CG-031	5/16	M7, M8	1.59	0.318	0.238
7711-037	7711CG-037	3/8	M10	1.75	0.381	0.286
7711-043	7711CG-043	7/16	-	2.00	0.323	0.242
7711-050	7711CG-050	1/2	M12	2.19	0.367	0.275
7711-056	7711CG-056	9/16	M14	2.34	0.429	0.322
7711-062	7711CG-062	5/8	M16	2.50	0.480	0.360
7711-068	7711CG-068	11/16	M18	2.41	0.542	0.406
7711-075	7711CG-075	3/4	-	2.56	0.590	0.442
7711-081	7711CG-081	13/16	M20	2.53	0.652	0.489
7711-087	7711CG-087	7/8	M22	2.79	0.697	0.523
7711-093	7711CG-093	15/16	M24	3.01	0.760	0.570
7711-100	7711CG-100	1	M25	3.15	0.800	0.600
7714-006	7714CG-006	1/16 NPT (1/8 NPT)	-	1.00	0.312	0.234
7714-012	7714CG-012	1/8 NPT	-	1.00	0.437	0.328
7714-025	7714CG-025	1/4 NPT	-	1.25	0.562	0.421
7714-037	7714CG-037	3/8 NPT	-	1.31	0.700	0.531
7714-050	7714CG-050	1/2 NPT	-	1.50	0.687	0.515

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information. *For DIN, ISO, or JIS Metric Shanks. Each adapter is calibrated for approximately 80% of the tap breakage torque for most standard hand, plug, or bottom taps. Coolant through adapters available upon request.

Numertap[®] 770

186 Tension & Compression Tapping Attachments



TENSION/COMPRESSION TAPPING FROM #6 - 1 5/8" HAND AND 1/16 - 1 1/4" PIPE

- Large work range eliminates the need to purchase multiple units.
- Short projection maximizes work piece size.
- Adjustable compression stroke ensures accurate depth control.
- Free-floating tension stroke ensures thread size and quality.
- Through-spindle coolant option gets coolant into the hole and flushes chips.
- Rugged alloy steel construction for long trouble-free service life.
- Radial float improves thread quality and tap life.

CAPACITY

Synchr/Tens & Comp

#6 - 1 5/8 Hand

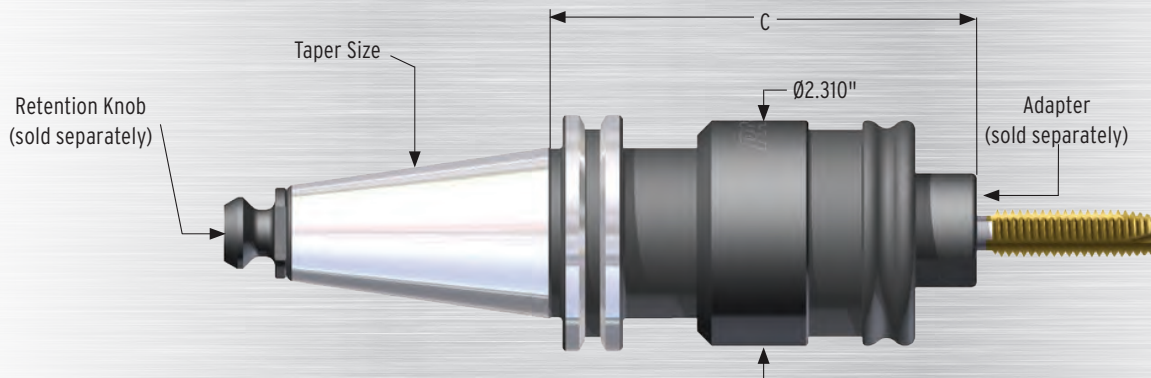
M3.5 - M36

1/16 - 1 1/4 NPT

Part Number	Coolant Through	C	Shank Type	Style	Approximate Weight
B40-77TA4	B40-77TA4C	4.99	BT40	1	5 lbs.
C40-77TA4	C40-77TA4C	4.85	CV40	1	5 lbs.
C50-77TA4	C50-77TA4C	4.04	CV50	1	9 lbs.
PC6-77TA5	PC6-77TA5C	5.16	PC6	-	5 lbs.
S10-77TA5	S10-77TA5C	5.25	1 Straight	2	4 lbs.
S12-77TA5	S12-77TA5C	5.25	1 1/4 Straight	2	4 lbs.
S15-77TA5	S15-77TA5C	5.25	1 1/2 Straight	2	4 lbs.
S20-77TA2	S20-77TA2C	2.75	2 Straight	3	4 lbs.

Other sizes available upon request. From B (Flange Entry) coolant available upon request. Coolant-through for up to 250 lbs. of pressure.

**TENSION & COMPRESSION, POSITIVE DRIVE, FOR THROUGH-HOLE TAPPING ON
CNC MACHINES, WITH TRADITIONAL TAPPING CYCLES.**



SYNCHRONOUS (RIGID) TAPPING FROM #6 - 1 5/8" HAND AND 1/16 - 1 1/4" PIPE

- Tension only (TT) allows synchronous tapping on machines so equipped.
- Quick-change tap adapters ensures quick, easy tap changeover.
- Radial float allows tap to follow the hole.
- Large work range maximizes work piece size and eliminates need to purchase multiple units.
- Short projection.
- Through-spindle coolant option gets coolant into the hole and flushes chips.
- Rugged alloy steel construction for long trouble-free service life.

TENSION-ONLY TAPPING

Part Number	Coolant Through	C	Shank Type	Approximate Weight
B40-77TT4	B40-77TT4C	4.99	BT40	5 lbs.
C40-77TT4	C40-77TT4C	4.85	CV40	5 lbs.
C50-77TT4	C50-77TT4C	4.04	CV50	9 lbs.
PC6-77TT5	PC6-77TT5C	5.16	PC6	5 lbs.
S10-77TT5	S10-77TT5C	5.25	1 Straight	4 lbs.
S20-77TT2	S20-77TT2C	2.75	2 Straight	4 lbs.

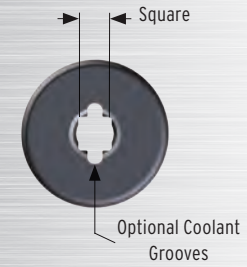
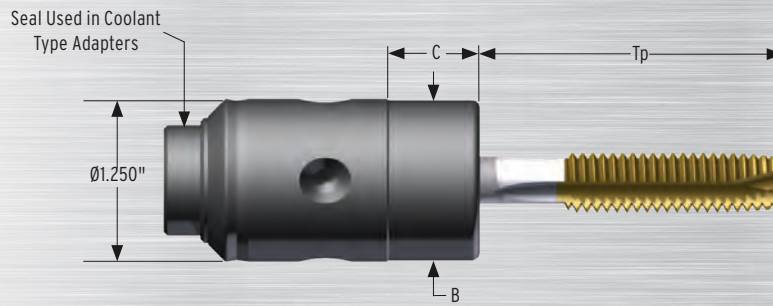
Other sizes available upon request. Coolant-through for up to 250 lbs. of pressure.

RIGID TAPPING

Part Number	Coolant Through	C	Shank Type	Approximate Weight
B40-77TR4	B40-77TR4C	3.75	BT40	5 lbs.
C40-77TR4	C40-77TR4C	3.75	CV40	5 lbs.
C50-77TR4	C50-77TR4C	3.75	CV50	9 lbs.
PC6-77FS5	PC6-77FS5C	5.16	PC6	5 lbs.
S10-77FS5	S10-77FS5C	5.25	1 Straight	4 lbs.
S20-77FS2	-	2.75	2 Straight	4 lbs.

Other sizes available upon request. Coolant-through for up to 250 lbs. of pressure.

SYNCHRONOUS AND BLIND HOLE TAPPING ON CNC MACHINES. SYNCHRONOUS RIGID TAPPING ON MACHINES WITH 32 BIT MICROPROCESSORS



770 TAP ADAPTERS

- Positive-drive, standard short length for use in NUMERTAP[®] 770 attachments
- Coolant groove or coolant through adapters must be used when coolant is fed through NUMERTAP[®] attachments

Part Number	Coolant Groove	Tap Size	Metric Tap Size (ANSI*)	B	C	Tp	Shank	Square
7716-#6	7716CG-#6	#6	M3.5	1.25	0.70	1.19	0.141	0.110
7716-#8	7716CG-#8	#8	M4	1.25	0.70	1.27	0.168	0.131
7716-#10	7716CG-#10	#10	M5	1.25	0.70	1.51	0.194	0.152
7716-#12	7716CG-#12	#12	-	1.25	0.70	1.51	0.220	0.165
7716-025	7716CG-025	1/4	M6	1.25	0.70	1.63	0.255	0.191
7716-031	7716CG-031	5/16	M7,M8	1.25	0.70	1.79	0.318	0.238
7716-037	7716CG-037	3/8	M10	1.25	0.70	2.00	0.381	0.286
7716-043	7716CG-043	7/16	-	1.25	0.70	2.06	0.323	0.242
7716-050	7716CG-050	1/2	M12	1.25	0.70	2.23	0.367	0.275
7716-056	7716CG-056	9/16	M14	1.25	0.70	2.40	0.429	0.322
7716-062	7716CG-062	5/8	M16	1.25	0.70	2.03	0.480	0.360
7716-068	7716CG-068	11/16	M18	1.61	2.25	2.17	0.542	0.406
7716-075	7716CG-075	3/4	-	1.61	2.25	2.32	0.590	0.442
7716-081	7716CG-081	13/16	M20	1.61	2.25	2.52	0.652	0.489
7716-087	7716CG-087	7/8	M22	1.61	2.25	2.71	0.697	0.523
7716-093	7716CG-093	15/16	M24	1.61	2.25	2.60	0.760	0.570
7716-100	7716CG-100	1	M25	1.61	2.25	3.05	0.800	0.600
7716-106	7716CG-106	1 1/16 & 1 1/8	M27	1.61	2.25	2.99/3.30	0.896	0.672
7716-118	7716CG-118	1 3/16 & 1 1/4	M30	1.61	2.25	2.56/2.88	1.021	0.766
7716-131	7716CG-131	1 5/16 & 1 3/8	M33	1.98	2.25	2.84/3.16	1.108	0.831
7716-144	7716CG-144	1 7/16 & 1 1/2	-	1.98	2.25	4.06/4.37	1.233	0.925
7716-162	7716CG-162	1 5/8	-	1.98	2.25	4.67	1.305	0.979
7717-006	7717CG-006	1/16 NPT - 1/8 NPT	-	1.25	0.70	1.06	0.312	0.234
7717-012	7717CG-012	1/8 NPT	-	1.25	0.70	1.06	0.437	0.328
7717-025	7717CG-025	1/4 NPT	-	1.25	0.70	1.18	0.562	0.421
7717-037	7717CG-037	3/8 NPT	-	1.25	0.70	1.06	0.700	0.531
7717-050	7717CG-050	1/2 NPT	-	1.61	2.25	1.53	0.687	0.515
7717-075	7717CG-075	3/4 NPT	-	1.61	2.25	1.64	0.906	0.679
7717-100	7717CG-100	1 NPT	-	1.61	2.25	1.93	1.125	0.843
7717-125	7717CG-125	1 1/4 NPT	-	1.98	2.25	2.00	1.312	0.984

Coolant through adapters available upon request

*For DIN, ISO, or JIS Metric Shanks available upon request.



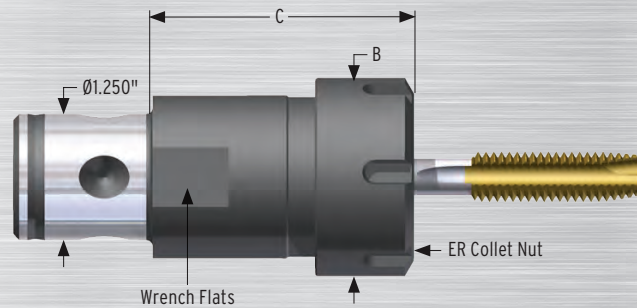
770 EXTENDED LENGTH TAP ADAPTERS

- Positive-drive, extended length for use in NUMERTAP® 770 attachments
- Coolant groove or coolant through adapters must be used when coolant is fed through NUMERTAP® attachments

C=3.70 (3" Extended)		C=6.70 (6" Extended)		Tap Size	(ANSI*)	B	Tp	Shank	Square
Part Number	Coolant Groove	Part Number	Coolant Groove						
7716-3-#6	7716CG-3-#6	7716-6-#6	7716CG-6-#6	#6	M3.5	0.75	1.06	0.141	0.110
7716-3-#8	7716CG-3-#8	7716-6-#8	7716CG-6-#8	#8	M4	0.75	1.13	0.168	0.131
7716-3-#10	7716CG-3-#10	7716-6-#10	7716CG-6-#10	#10	M5	0.75	1.38	0.194	0.152
7716-3-#12	7716CG-3-#12	7716-6-#12	7716CG-6-#12	#12	-	0.75	1.34	0.220	0.165
7716-3-025	7716CG-3-025	7716-6-025	7716CG-6-025	1/4	M6	0.75	1.44	0.255	0.191
7716-3-031	7716CG-3-031	7716-6-031	7716CG-6-031	5/16	M7,M8	0.75	1.59	0.318	0.238
7716-3-037	7716CG-3-037	7716-6-037	7716CG-6-037	3/8	M10	0.88	1.75	0.381	0.286
7716-3-043	7716CG-3-043	7716-6-043	7716CG-6-043	7/16	-	0.88	2.00	0.323	0.242
7716-3-050	7716CG-3-050	7716-6-050	7716CG-6-050	1/2	M12	0.88	2.19	0.367	0.275
7716-3-056	7716CG-3-056	7716-6-056	7716CG-6-056	9/16	M14	1.00	2.35	0.429	0.322
7716-3-062	7716CG-3-062	7716-6-062	7716CG-6-062	5/8	M16	1.00	2.50	0.480	0.360
7716-3-068	7716CG-3-068	7716-6-068	7716CG-6-068	11/16	M18	1.25	2.40	0.542	0.406
7716-3-075	7716CG-3-075	7716-6-075	7716CG-6-075	3/4	-	1.25	2.56	0.590	0.442
7716-3-081	7716CG-3-081	7716-6-081	7716CG-6-081	13/16	M20	1.25	2.53	0.652	0.489
7716-3-087	7716CG-3-087	7716-6-087	7716CG-6-087	7/8	M22	1.25	2.68	0.697	0.523
7716-3-093	7716CG-3-093	7716-6-093	7716CG-6-093	15/16	M24	1.50	2.90	0.760	0.570
7716-3-100	7716CG-3-100	7716-6-100	7716CG-6-100	1	M25	1.50	2.81	0.800	0.600
7716-3-106	7716CG-3-106	7716-6-106	7716CG-6-106	1 1/16 & 1 1/8	M27	1.61	2.75/3.06	0.896	0.672
7716-3-118	7716CG-3-118	7716-6-118	7716CG-6-118	1 3/16 & 1 1/4	M30	1.61	2.94/3.25	1.021	0.766
7716-3-131	7716CG-3-131	7716-6-131	7716CG-6-131	1 5/16 & 1 3/8	M33	1.61	3.19/3.50	1.108	0.831
7716-3-144	7716CG-3-144	7716-6-144	7716CG-6-144	1 7/16 & 1 1/2	-	1.98	3.44/3.75	1.233	0.925
7716-3-162	7716CG-3-162	7716-6-162	7716CG-6-162	1 5/8	-	1.98	4.06	1.305	0.979
7717-3-006	7717CG-3-006	7717-6-006	7717CG-6-006	1/16 NPT & 1/8 NPT	-	1.00	1.00	0.312	0.234
7717-3-012	7717CG-3-012	7717-6-012	7717CG-6-012	1/8 NPT	-	1.00	1.00	0.437	0.328
7717-3-025	7717CG-3-025	7717-6-025	7717CG-6-025	1/4 NPT	-	1.00	1.25	0.562	0.421
7717-3-037	7717CG-3-037	7717-6-037	7717CG-6-037	3/8 NPT	-	1.25	1.31	0.700	0.531
7717-3-050	7717CG-3-050	7717-6-050	7717CG-6-050	1/2 NPT	-	1.25	1.50	0.687	0.515
7717-3-075	7717CG-3-075	7717-6-075	7717CG-6-075	3/4 NPT	-	1.61	1.44	0.906	0.679
7717-3-100	7717CG-3-100	7717-6-100	7717CG-6-100	1 NPT	-	1.61	1.88	1.125	0.843
7717-3-125	7717CG-3-125	7717-6-125	7717CG-6-125	1 1/4 NPT	-	1.98	1.81	1.312	0.984

Coolant through adapters available upon request

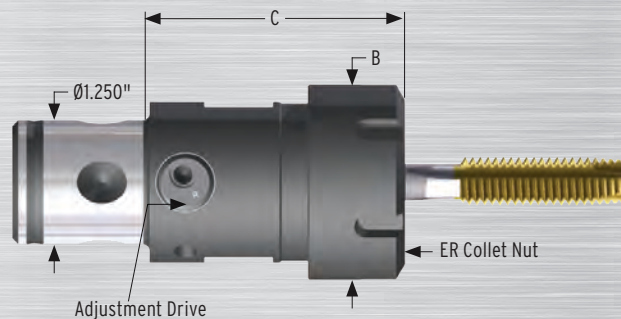
*For DIN, ISO, or JIS Metric Shanks available upon request.



ER COLLET TAP ADAPTERS

- For use in with Square Drive Collets

Part Number	Part Number with Coolant	Collet Size	Tap Size Range	B	C	Collet Nut Wrench
7716-ER16	7716C-ER16	16	#8 - 1/4	1.26	1.54	ECN20W
7716-ER20	7716C-ER20	20	#8 - 1/2	1.38	1.58	20ERHNW
7716-ER25	7716C-ER25	25	#8 - 5/8	1.65	1.50	25ERNW
7716-ER32	7716C-ER32	32	#8 - 13/16	1.97	2.34	32ERNW
7716-ER40	7716C-ER40	40	1/4 - 1	2.48	2.34	40ERNW

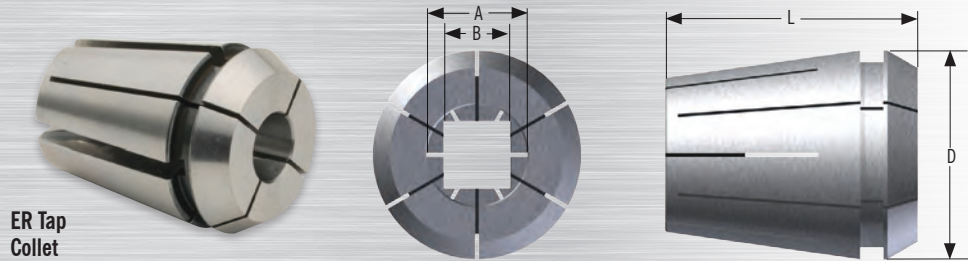


UNIVERSAL ER COLLET TAP ADAPTERS

- For use in all tapping cycles on DIN, ISO, Japanese or ANSI (inch and metric) tap shanks.
- Provides flexibility for any tap shank size.
- Adjustable drive plug for any square size in the tap range. Use standard ER Collets, refer to tapsize chart, pages 74-86

Part Number	Part Number with Coolant	Collet Size Range	Tap Size	B	C	Collet Nut Wrench	Open End
7716-ER16U	7716-ER16UC	16	#6 - 3/8	1.26	1.71	ECN20W	ECN20W
7716-ER20U	7716-ER20UC	20	#10 - 5/8	1.38	1.93	20ERHNW	ECN20W
7716-ER32U	7716-ER32UC	32	9/16 - 15/16	1.97	2.43	32ERNW	180CNW
7716-ER40U	7716-ER40UC	40	1.0 - 1.375	2.48	3.54	40ERNW	180CNW

ER TAP COLLETS



ER Tap Collet

ER 16 INCH/METRIC

Part Number	Inch Size	ANSI Metric
ERT16-#0-6	#0-#6	-
ERT16-#8	#8	M4
ERT16-#10	#10	M4.5, M5
ERT16-#12	#12	-
ERT16-025	1/4"	M6,M6.5
ERT16-031	5/16"	M7, M8
ERT16-037	3/8"	M10
ERT16-043	7/16"	-
ERT16-050	1/2"	M12,M12.5

ER 16 INCH/METRIC SET

PART NUMBER	ERT16-S009
NUMBER OF PIECES	9 PIECES
RANGE	#0-1/2"

ER 20 INCH/METRIC

ERT20-#8	#8	M4
ERT20-#10	#10	M4.5, M5
ERT20-#12	#12	-
ERT20-025	1/4"	M6,M6.5
ERT20-031	5/16"	M7, M8
ERT20-037	3/8"	M10
ERT20-043	7/16"	-
ERT20-050	1/2"	M12,M12.5

ER 20 INCH/METRIC SET

PART NUMBER	ERT20-S008
NUMBER OF PIECES	8 PIECES
RANGE	#8-1/2"

ER 25 INCH/METRIC

ERT25-#8	#8	M4
ERT25-#10	#10	M4.5, M5
ERT25-#12	#12	-
ERT25-012N	1/8" NPT	-

ER 25 INCH/METRIC

Part Number	Inch Size	ANSI Metric
ERT25-025	1/4"	M6,M6.5
ERT25-031	5/16"	M7, M8
ERT25-037	3/8"	M10
ERT25-043	7/16"	-
ERT25-050	1/2"	M12,M12.5
ERT25-056	9/16"	M14
ERT25-062	5/8"	M16

ER 25 INCH/METRIC SET

PART NUMBER	ERT25-S011
NUMBER OF PIECES	11 PIECES
RANGE	#8-5/8"

ER 32 INCH/METRIC

ERT32-#0-6	#0-#6	-
ERT32-#8	#8	M4
ERT32-#10	#10	M4.5, M5
ERT32-#12	#12	-
ERT32-012N	1/8" NPT	-
ERT32-025	1/4"	M6,M6.5
ERT32-025N	1/4" NPT	-
ERT32-031	5/16"	M7, M8
ERT32-037	3/8"	M10
ERT32-043	7/16"	-
ERT32-050	1/2"	M12,M12.5
ERT32-056	9/16"	M14
ERT32-062	5/8"	M16
ERT32-068	11/16"	M18
ERT32-075	3/4"	-
ERT32-081	13/16"	M20

ER 32 INCH/METRIC SET

PART NUMBER	ERT32-S016
NUMBER OF PIECES	16 PIECES
RANGE	#6-13/16"

ER 40 INCH/METRIC

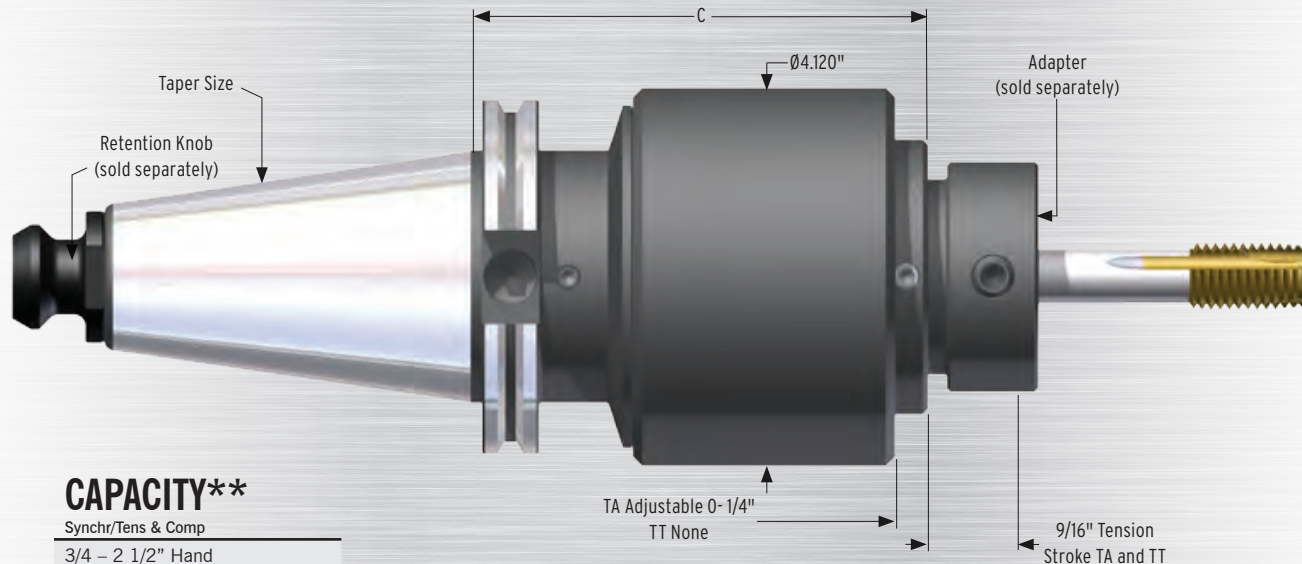
Part Number	Inch Size	ANSI Metric
ERT40-012N	1/8" NPT	-
ERT40-025	1/4"	M6,M6.5
ERT40-025N	1/4" NPT	-
ERT40-031	5/16"	M7, M8
ERT40-037	3/8"	M10
ERT40-037N	3/8" NPT	-
ERT40-043	7/16"	-
ERT40-050	1/2"	M12,M12.5
ERT40-050N	1/2" NPT	-
ERT40-056	9/16"	M14
ERT40-062	5/8"	M16
ERT40-068	11/16"	M18
ERT40-075	3/4"	-
ERT40-081	13/16"	M20
ERT40-087	7/8"	M22
ERT40-093	15/16"	M24
ERT40-100	1"	M25

ER 40 INCH/METRIC SET

PART NUMBER	ERT40-S017
NUMBER OF PIECES	17 PIECES
RANGE	1/4" - 1"

Numertap® 6000

192 Large Size Tapping Solutions



CAPACITY**

Synchr/Tens & Comp

3/4 – 2 1/2" Hand

1/2 – 2" PIPE

M19 – M56

TENSION & COMPRESSION TAPPING

(Synchronous solutions available upon request)

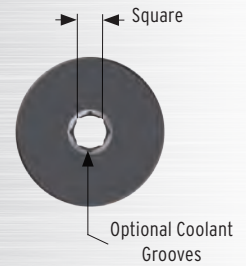
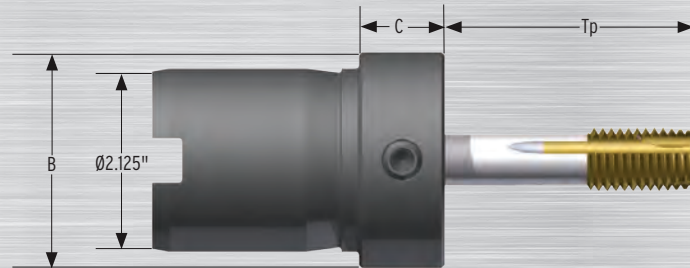
FROM 3/4" – 2 1/2" 4-PITCH AND 3/4" – 3 1/2" 6 OR 8-PITCH TAPS

- Large work range eliminates the need to purchase multiple units.
- Rugged alloy steel construction for long trouble-free service life.
- Short compression stroke allows holes to be retapped and facilitates depth control.
- Free-floating tension stroke ensures thread size and quality.
- Through-spindle coolant option gets coolant into the hole and flushes chips.

Part Number	Coolant Fed	C	Shank Type	Approximate Weight
-	C50-60TA5C	5.62	CV50	21 lbs.
N50-60TA5	-	5.62	NMTB 50	21 lbs.
-	S20-60TA5C	6.00	2" Straight	17 lbs.

For Synchronous Tapping cycles, use (TT) for Tension-Only or (FS) for Fixed Shank, Part Number example: C50-60 (TT)5.
Larger capacity available for 8-pitch taps. Coolant-through for up to 250 lbs. of pressure.

TENSION & COMPRESSION, POSITIVE DRIVE, FOR THROUGH-HOLE TAPPING



6000 TAP ADAPTERS

- For use in NUMERTAP® 6000 attachments.
- Coolant groove or coolant through adapters must be used when coolant is fed through NUMERTAP® attachments

6000 TAP ADAPTERS

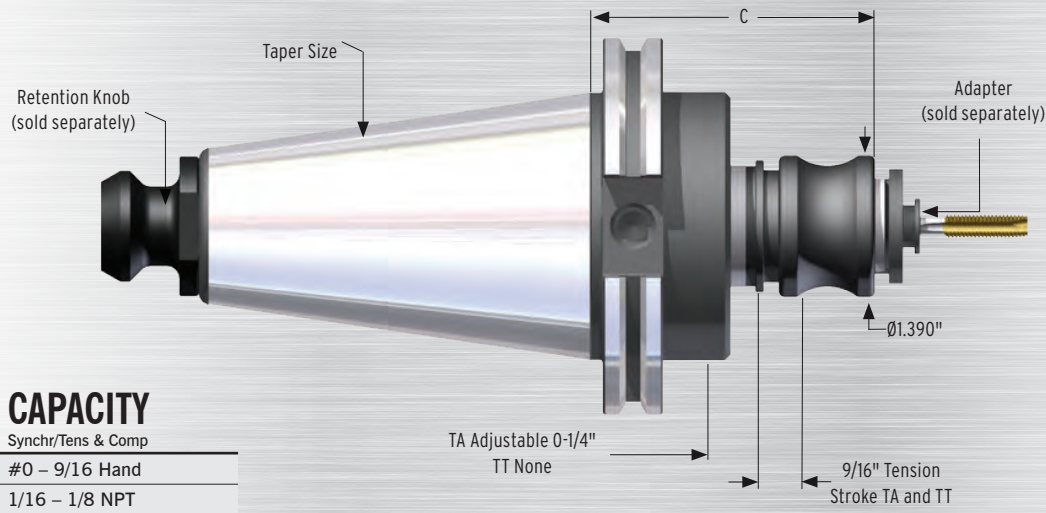
Part Number	Coolant Groove	Tap Size	Metric Tap Size (ANSI*)	B	C	Tp	Shank	Square
6-075	6-075CG	3/4	M19	2.50	1.00	2.21	0.590	0.442
6-081	-	13/16	M20	2.50	1.00	2.43	0.652	0.489
6-087	-	7/8	M22	2.50	1.00	2.59	0.697	0.523
6-093	-	15/16	M24	2.50	1.00	2.61	0.760	0.570
6-100	6-100CG	1	M25	2.50	1.00	2.76	0.800	0.600
6-106	6-106CG	1 1/16 & 1 1/8	M27	2.50	1.00	2.70/3.01	0.896	0.672
6-118	6-118CG	1 3/16 & 1 1/4	M30	2.50	1.00	2.84/3.15	1.021	0.766
6-131	6-131CG	1 5/16 & 1 3/8	M33	2.50	1.00	3.09/3.40	1.108	0.831
6-144	6-144CG	1 7/16 & 1 1/2	M36	2.50	1.00	3.34/3.65	1.233	0.925
6-162	6-162CG	1 5/8	M39	2.50	1.00	3.96	1.305	0.979
6-175	6-175CG	1 3/4	M42	3.20	1.00	4.15	1.430	1.072
6-187	6-187CG	1 7/8	M45	3.20	1.00	4.46	1.519	1.139
6-200	6-200CG	2	M48	3.20	1.00	5.13	1.644	1.233
6-212	6-212CG	2 1/8	-	3.20	3.10	5.50	1.769	1.327
6-225	6-225CG	2 1/4	M56	3.20	3.10	5.71	1.894	1.420
6-237	6-237CG	2 3/8	-	3.20	3.10	5.96	2.018	1.524
6-250	6-250CG	2 1/2	-	3.40	3.10	6.15	2.100	1.585
6-075N	-	3/4 NPT	-	2.50	1.00	1.56	0.906	0.679
6-100N	-	1 NPT	-	2.50	1.00	1.89	1.125	0.843
6-125N	6-125NCG	1 1/4 NPT	-	2.50	1.00	1.96	1.312	0.984
6-150N	6-150NCG	1 1/2 NPT	-	2.50	1.00	2.05	1.500	1.125
6-200N	6-200NCG	2 NPT	-	3.20	3.10	2.20	1.875	1.406

Coolant through adapters available upon request

*For DIN, ISO, or JIS Metric Shanks available upon request.

Numertap[®] 100

194 Synchronous or Tension & Compression Tapping Attachments



CAPACITY

Synchr/Tens & Comp

#0 – 9/16 Hand

1/16 – 1/8 NPT

TA Adjustable 0-1/4"
TT None

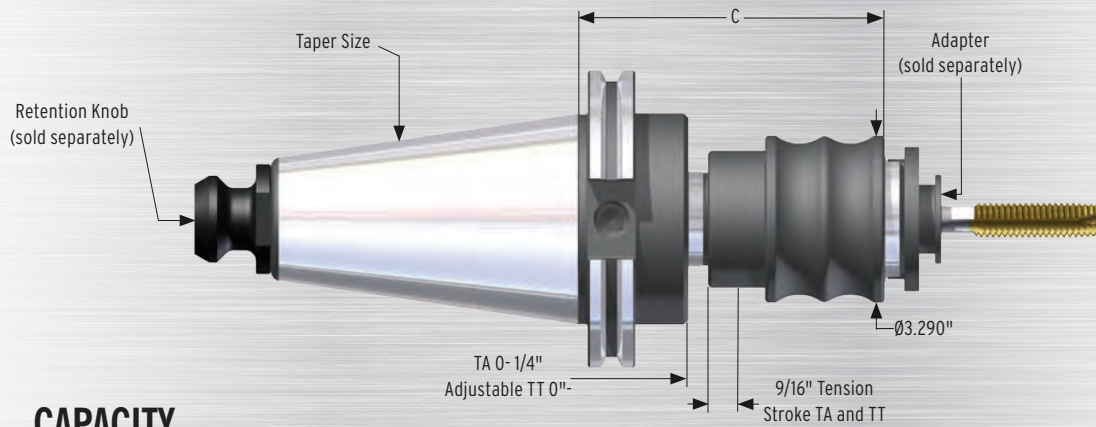
9/16" Tension
Stroke TA and TT

100 SYNCHRONOUS/TENSION & COMPRESSION TAPPING FROM 0 - 9/16" HAND AND 1/16 - 1/8" NPT

- For use with popular Bilz style size 1 adapters.
- Rigid and tension-only available for use with synchronous tapping cycles.
- Radial float improves thread quality and tap life.
- Short projection maximizes work piece size.
- Adjustable short compression stroke ensures accurate depth control, TA models.
- Free-floating tension stroke ensures thread size and quality, TA and TT models.
- Rugged alloy steel construction long trouble-free service life.

Part Number	Coolant	Taper	Compression	Tension	C
B40-10TA3	B40-10TA3C	BT40	0 - 0.250	0.56	4.08
B40-10TR3	B40-10TR3C	BT40	Rigid	Rigid	3.83
C40-10TA3	C40-10TA3C	CV40	0 - 0.250	0.56	3.96
C40-10TR3	C40-10TR3C	CV40	Rigid	Rigid	3.96
C40-10TT3	C40-10TT3C	CV40	0	0.56	3.96
C50-10TA3	C50-10TA3C	CV50	0 - 0.250	0.56	3.15
C50-10TR3	C50-10TR3C	CV50	Rigid	Rigid	3.15
C50-10TT3	C50-10TT3C	CV50	0	0.56	3.96
N50-10TA3	-	NMTB 50	0 - 0.250	0.56	3.96
S10-10FS4	S10-10FS4C	1" Straight	Rigid	Rigid	4.43
S10-10TA4	S10-10TA4C	1" Straight	0.250	0.56	4.43

Coolant-through for up to 250 lbs. of pressure.



CAPACITY

Synchr/Tens & Comp

5/16 – 7/8 Hand

1/4 & 1/2 NPT

200 SYNCHRONOUS/TENSION & COMPRESSION TAPPING FROM 5/16 - 7/8" HAND AND 1/4 - 1/2" NPT

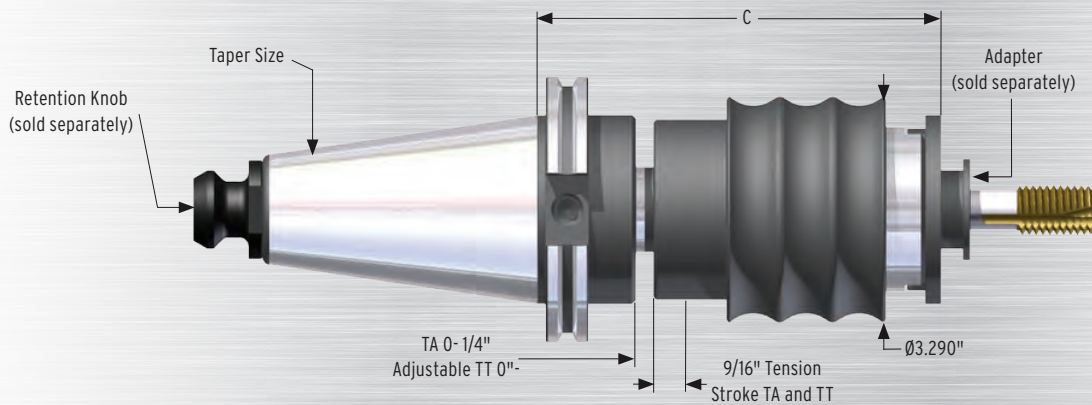
- For use with popular Bilz style size 2 adapters.
- Rigid and tension-only available for use with synchronous tapping cycles.
- Radial float improves thread quality and tap life.
- Short projection maximizes work piece size.
- Adjustable short compression stroke ensures accurate depth control, TA models .
- Free-floating tension stroke ensures thread size and quality, TA and TT models.
- Rugged alloy steel construction long trouble-free service life.

Part Number	Part Number with Coolant	Taper	Compression	Tension	C
B40-20TA4	B40-20TA4C	BT40	0 - 0.250	0.56	5.19
C40-20TA4	C40-20TA4C	CV40	0 - 0.250	0.56	5.06
C40-20TR4	C40-20TR4C	CV40	Rigid	Rigid	3.86
C40-20TT4	C40-20TT4C	CV40	0	0.56	3.86
C50-20TA4	C50-20TA4C	CV50	0 - 0.250	0.56	4.25
C50-20TR4	C50-20TR4C	CV50	Rigid	Rigid	4.25
C50-20TT4	C50-20TT4C	CV50	0	0.56	4.25
S10-20TA5	S10-20TA5C	1" Straight	0.250	0.56	5.46
S10-20FS5	S10-20FS5C	1" Straight	Rigid	Rigid	5.46
S12-20TA5	S12-20TA5C	1 1/4" Straight	0 - 0.250	0.56	5.46
S20-20FS3	S20-20FS3C	2" Straight	0.250	0.56	5.93
S20-20TA3	S20-20TA3C	2" Straight	Rigid	Rigid	5.93

PC6 and PC7 modular attachments available upon request. Coolant-through for up to 250 lbs. of pressure.

Numertap[®] 300

196 Synchronous or Tension & Compression Tapping Attachments



300 SYNCHRONOUS/TENSION & COMPRESSION TAPPING FROM 13/16 - 1 3/8" HAND AND 3/4 - 1" NPT

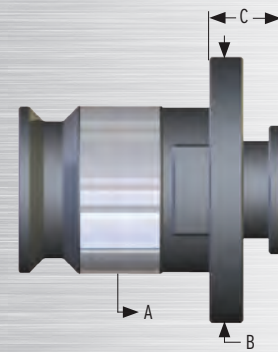
- For use with popular Bilz style size 3 adapters.
- Rigid and tension-only available for use with synchronous tapping cycles.
- Radial float improves thread quality and tap life.
- Short projection maximizes work piece size.
- Adjustable short compression stroke ensures accurate depth control, TA models .
- Free-floating tension stroke ensures thread size and quality, TA and TT models.
- Rugged alloy steel construction long trouble-free service life.

Part Number	Part Number with Coolant	Taper	Compression	Tension	C
C40-30TA5	-	CV40	0 -.250	0.56	6.46
C40-30FS5	C40-30FS5C	CV40	Rigid	Rigid	6.46
C40-30TT5	C40-30TT5C	CV40	0	0.56	6.46
C50-30TA5	C50-30TA5C	CV50	0 -.250	0.56	5.65
C50-30FS5	C50-30FS5C	CV50	Rigid	Rigid	5.65
C50-30TT5	C50-30TT5C	CV50	0	0.56	5.65

PC6 and PC7 modular attachments available upon request.
 *For Synchronous tapping cycles, use (TT) for Tension Only, or (FS) for Fixed Shank.

Numertap® 100, 200, 300

Tap Adapters



Model	A	B	C
100	0.75	1.18	0.28
200	1.22	1.89	0.43
300	1.89	2.75	0.55
100T	0.75	1.26	0.98
200T	1.22	1.97	1.34
300T	1.89	2.83	1.77

100, 200, & 300 AP ADAPTERS

- For use in NUMERTAP® 100, 200 & 300 Attachments.

Tap Size	Size 1: Numertap 100 Attachment			Size 2: Numertap 200 Attachment			Size 3: Numertap 300 Attachment		
	Positive Drive			Positive Drive			Positive Drive		
	Part No.	Coolant Groove	Torque Controlled	Part No.	Coolant Groove	Torque Controlled	Part No.	Coolant Groove	Torque Controlled
#0 - 6	10-#0-6	10CG-#0-6	10T-#0-6	-	-	-	-	-	-
#8	10-#8	10CG-#8	10T-#8	-	-	-	-	-	-
#10	10-#10	10CG-#10	10T-#10	-	-	-	-	-	-
#12	10-#12	10CG-#12	10T-#12	-	-	-	-	-	-
1/4	10-025	10CG-025	10T-025	-	-	-	-	-	-
5/16	10-031	10CG-031	10T-031	20-031	20CG-031	20T-031	-	-	-
3/8	10-037	10CG-037	10T-037	20-037	20CG-037	20T-037	-	-	-
7/16	10-043	10CG-043	10T-043	20-043	20CG-043	20T-043	-	-	-
1/2	10-050	10CG-050	10T-050	20-050	20CG-050	20T-050	-	-	-
9/16	10-056	10CG-056	10T-056	20-056	20CG-056	20T-056	-	-	-
5/8	-	-	-	20-062	20CG-062	20T-062	-	-	-
11/16	-	-	-	20-068	20CG-068	20T-068	-	-	-
3/4	-	-	-	20-075	20CG-075	20T-075	-	-	-
13/16	-	-	-	20-081	20CG-081	20T-081	30-081	30CG-081	30T-081
7/8	-	-	-	20-087	20CG-087	20T-087	30-087	30CG-087	30T-087
15/16	-	-	-	-	-	-	30-093	30CG-093	30T-093
1	-	-	-	-	-	-	30-100	30CG-100	30T-100
1 1/8	-	-	-	-	-	-	30-106	30CG-106	30T-106
1 1/4	-	-	-	-	-	-	30-118	30CG-118	30T-118
1 3/8	-	-	-	-	-	-	30-131	30CG-131	30T-131
1/16 NPT	10-006N	10CG-006N	10T-006N	-	-	-	-	-	-
1/8 NPT	10-012N	10CG-012N	10T-012N	-	-	-	-	-	-
1/4 NPT	-	-	-	20-025N	20CG-025N	20T-025N	-	-	-
3/8 NPT	-	-	-	20-037N	20CG-037N	20T-037N	-	-	-
1/2 NPT	-	-	-	20-050N	20CG-050N	20T-050N	-	-	-
3/4 NPT	-	-	-	-	-	-	30-075N	30CG-075N	30T-075N
1 NPT	-	-	-	-	-	-	30-100N	30CG-100N	30T-100N
SET (1 EA.)	10-S012	10CG-S012	10T-S012	20-S013	20CG-S013	20T-S013	30-S009	30CG-S009	30T-S009

Other sizes available upon request. Please call Parlec or your local Parlec representative for more information.

TAP DOES NOT START

Check the following:

- Program depth: Compression stroke may use up the entire program depth.
- Tap drill size: Check for tap drill size.
- Tap sharpness: Check for dull tap.

PREMATURE TORQUING OF UNIT

Check the following:

- Tap sharpness: Dull taps require more driving torque than sharp taps. NUMERTAP® systems sense dull taps. Replace to prevent possible breakage.
- Tap drill size and adequate drill depth: Check for correct size and depth.
- Tap sharpness: Check for dull tap.

OVERSIZED THREADS

Check the following:

- Feeds and speeds: Oversized threads mean that the space between adjacent teeth is too large. This is caused either by forcing or retarding the feed rate with respect to the speed. Check program feed versus tap pitch.
- Tension stroke of tapping head: Check to ensure that the tension stroke does not stick.

POOR THREAD QUALITY

Check the following:

- Feeds and speeds: Oversized threads mean that the space between adjacent teeth is too large. This is caused either by forcing or retarding the feed rate with respect to the speed. Check program feed versus tap pitch.
- Tap sharpness and condition: Check for dull tap or broken teeth. Replace as required.

Consult NUMERTAP® Tap Guide for proper tapping speeds, lubricants, geometry, and tap drill sizes for specific H limits and specific materials. If you are not using NUMERTAP® taps, consult the tap manufacturer.

Technical Information

TAPPING SPEEDS

Material	Tapping Speed (SFM)
Aluminum	90 - 110
Brass	80 - 100
Bronze	40 - 60
Copper	70 - 90
Copper-Beryllium	40 - 50
Inconel, Hastalloy, Waspalloy	5 - 15
Iron-Cast	65 - 75
Iron-Malleable	30 - 60
Magnesium	90 - 110
Plastics	60 - 90
Steel-Cast	30 - 40
Steel-Free Machining	50 - 80
Steel-Chromium	25 - 40
Steel-Alloy	20 - 35
Steel-Stainless	15 - 30
Titanium	10 - 25
Zinc-Die Cast	80 - 120

$$\text{RPM} = \frac{3.82 \times \text{SFM}}{\text{Tap Diameter}}$$

$$\text{FEED (IPR)} = \frac{1}{\text{Pitch}}$$

$$\text{FEED (IPM)} = \text{Feed (IPR)} \times \text{Speed (RPM)}$$

Tapping speeds are for general purpose taps. Consult tap manufacturer for high geometry taps.

TORQUE REQUIREMENTS

Tap Size	Brass	Aluminum and Leaded Brass	200 BHN Steel	300 BHN Steel	400 BHN Steel	Approximate Breaking Torque
#6	4	2	7	9	10	8
#8	4.5	2.25	8	10	11	30
#10	8.5	4.25	15	19	21	42
1/4	16	8	28	36	40	106
5/16	24	12	42	54	60	180
3/8	37	18.50	65	83	93	240
7/16	54	27	94.5	122	135	500
1/2	68	34	119	153	170	700
9/16	88	44	154	198	220	850
5/8	119	59.50	208	268	298	1000
3/4	170	85	298	383	425	1500
7/8	238	119	416	536	595	2100
1	337	168.50	590	758	842	2700
1 1/4	544	277	970	1246	1385	3000+
1 1/2	850	425	1488	1912	2125	3000+
1 3/4	1411	706	2471	3177	3530	3000+
2	1904	952	3332	4284	4760	3000+
2 1/4	2159	1080	3780	4860	5400	3000+
2 1/2	2975	1488	5208	6996	7440	3000+
2 - 8	533	267	933	1199	1333	3000+
2 1/2 - 8	663	332	1160	1492	1658	3000+
3 - 8	1139	570	1995	2565	2850	3000+
4 - 8	1411	706	2471	3177	3530	3000+
5 - 8	1768	884	3094	3978	4420	3000+
6 - 8	2125	1063	3720	4784	5315	3000+

All values in table above are in inch/lbs. Approximate values based on sharp, 4 Flute coarse pitch hand taps at 65% thread height. Dull taps require approximately 50% more torque. For 55% and 75% thread heights, multiply above values by .75 and 1.25 respectively. Torque values for helical flute taps are approximately 70% of those shown. Torque values for chip drive taps are approximately 60% of those shown. Torque values for fine pitch threads are approximately 50% of those shown.

Technical Information

200 Programming Information

Experience has shown that a tap will cut the best quality threads when allowed to act as its own lead screw, feeding precisely on pitch to exactly the required depth of thread. The machine must be prevented from forcing the tap to do anything else or the thread quality will suffer or the tap may break. The tension stroke in the NUMERTAP® provides the freedom required to cut the best quality threads with the least risk of breakage.

NUMERTAP® Systems can be used on any suitable machine tool which has a reversing spindle. Effective choices of spindle speeds and feeds for particular tapping requirements can be made by the following the sample calculations: Tapping a 3/4 - 10 thread, 1" deep in mild steel:

Tapping a 3/4 thread 1" Deep in mild steel:

- $RPM = (12 \times SFM)/(3.82 \times SFM)/D$ where D is the tap diameter.
- Use the chart on the previous page to find the tapping speed in SFM.
- $RPM = (3.82 \times .50)/.75 = 255$ RPM
- Tap Feed Rate = Pitch x RPM = .100 x 255 = 25.5 inches/minute.
- Feed in and out at the same feed rate.

When using a conventional tapping cycle, optimum performance is insured by slightly underfeeding the tap, normally by 2% - 10%. This forces the tension stroke of the tapping head to be used and eliminates any effect of the machine tool. The Z axis feed distance must be reduced by this same percentage. The axial float in the NUMERTAP® takes up the difference between the required thread depth and the programmed depth. If a 10% underfeed was selected, the calculations would be as follows:

- Program Feed Rate = .90 x on pitch feed rate = .90 x 25.5 = 22.95"/minute.
- Spindle Z-Axis Travel = .90 x required depth = .90 x 1.000 = .900"
- Axial Float used = 1.000 - .900 = .100"
- Do not allow the Axial Float used to equal the tension stroke length (.56).

If the tapping cycle is controlled by a "canned" program which calculates its own feed rates from an input of pitch and speed. The desired underfeed can be obtained by deliberately entering a reduced value of pitch or an increased value of threads per inch as follows:

- Actual TPI = 10 (pitch = 1/10 = .100")
- Input TPI = 11 (pitch = 1/11 = .091")
- Program Feed Rate = .091 x 255 = 23.2"/minute
- Program Feed Depth = .91 x 1.000 = .910"

If the CNC machine has a slow spindle reversal, the program must compensate for any drive system inertia by including a dwell not long enough for the spindle to come to a full stop when the tap has reached full thread depth. If the spindle has not stopped when the program calls for it to feed out, the tap could break or be pulled out of the adapter, or the threads could be ruined.

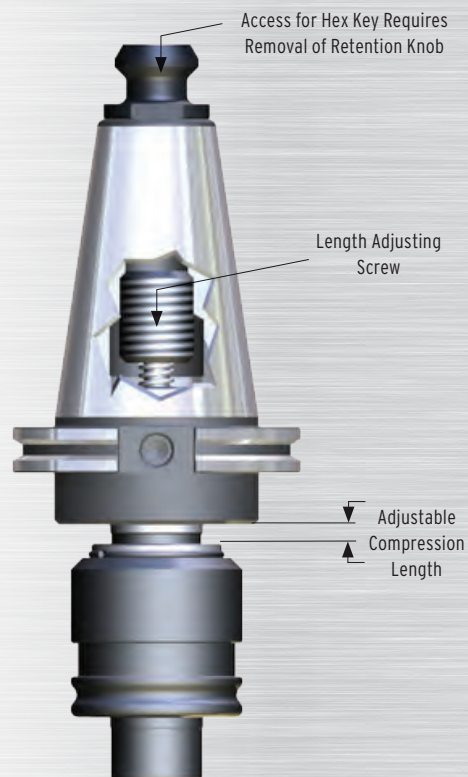
These problems can be rectified using a program similar to the following:

- Spindle clockwise
- Feed to depth (incorporating underfeed)
- Spindle stop

When using a synchronous tapping cycle, the drive system inertia may create the undesirable effect of tap elongation, or thread distortion. The best answer to this problem is the use of tension only tapping heads. Refer to the selection guide (pages 92-94).

Numertap® 100, 200, 300, 700, 770 units

The NUMERTAP® 100, 200, 300, 700 and 770 series tapping attachments with machine tapers, feature a length adjustment screw. This allows the compression stroke to be reduced or eliminated, if desired, to provide more accurate depth control. Adjusting the compression stroke to zero will result in a tension only set-up, the best solution for synchronous tapping. Turning the length adjustment screw counterclockwise reduces the compression stroke but does not affect the tension stroke.



The projections of the unit can be adjusted by turning the screw in either direction until the desired length is reached. Changing the length in this manner does not affect the tension stroke. This is an important feature if redundant tools are being set of if reground taps are being used in existing programs

Adjust the compression stroke counterclockwise until the tapping attachment body contacts the shank. This will set for tension only. This is recommended to eliminate or avoid tap elongation in synchronous tapping cycles.

TENSION-ONLY, THE BEST SOLUTION FOR SYNCHRONOUS TAPPING

The NUMERTAP® 100, 200, 300, 700 and 770 units can be purchased as tension only units (TT) or can be adjusted to tension only units by following the instructions above. Tension only is the best solution for synchronous tapping. If the unit is purchased as a TT, the tension spring is eliminated during assembly.

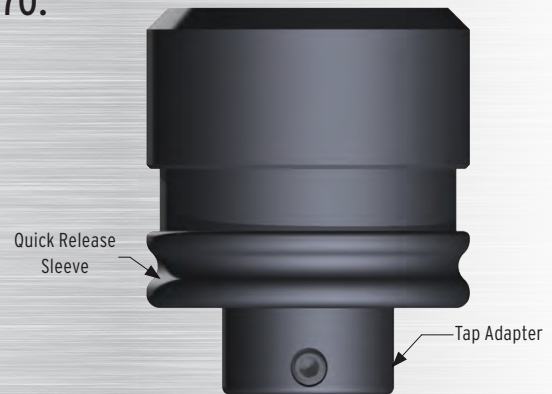
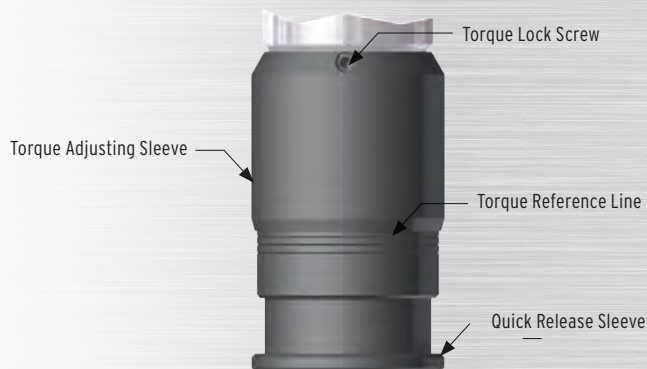
The unit will be the same length as a TA unit. If a TA unit is adjusted to eliminate the compression stroke, the unit will be 1/4" shorter than its original projection length. NUMERTAP® 700 units can be adjusted for tension only, but cannot be used in synchronous tapping cycles.

Technical Information

NUMERTAP® 80, 700, 770 ADAPTERS

To install a tap adapter into a NUMERTAP® 80, 700 or 770:

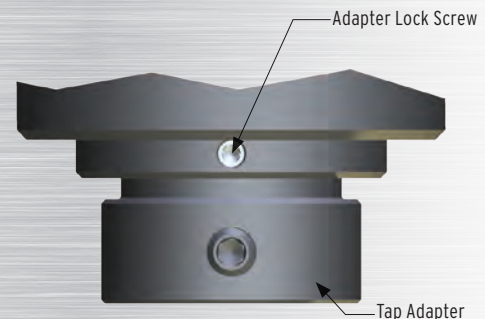
1. Pull back the quick-release sleeve.
2. Insert the tap adapter into the unit and push back until it seats.
A slight twisting motion while pushing will ensure proper seating.
3. Release the quick release sleeve. It should return to its normal position.
If it does not return, the adapter is not seated. Twist and push back until it seats.



NUMERTAP® 6000

To install a tap adapter into a NUMERTAP® 6000:

1. Loosen the adapter lock set screw.
2. Insert the tap adapter into the unit and push back until it seats.
A slight twisting motion while pushing will ensure proper seating.
3. Tighten the adapter lock screw.



NUMERTAP® 80

The factory setting for the torque adjusting sleeve is at maximum torque. In this state, the first (closest to the tap) torque reference line will be barely visible. This setting provides a large safety factor against tap breakage and should not be changed unless low tensile materials are being tapped.

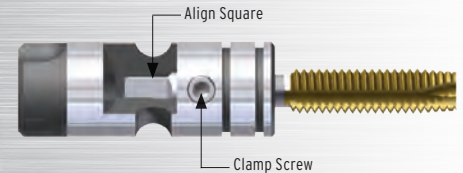
When tapping soft materials, particularly with small taps, it is advisable to use less torque to prevent thread distortion when tap bottoms.

To adjust the torque, loosen the torque lock screw and rotate the torque adjusting sleeve to its upper limit. All three torque reference lines will be visible. Take a test cut. If the tap does not cut, increase the torque by turning the adjusting sleeve. When the proper setting is reached and there is enough torque pressure, turn the torque adjusting ring another 1/8 turn and secure the lock screw. Always adjust the torque to coarse pitch when using more than one tap in the same tapping head.

NUMERTAP® 80, 700, 770, 6000 ADAPTERS

1. Loosen the set screw in the tap adapter.
2. Insert the tap into the adapter and twist until the square on the tap is aligned with the square in the adapter. Push back until the adapter is fully seated against the shoulder of the square.
3. Do not grind grooves or flats on the tap shank

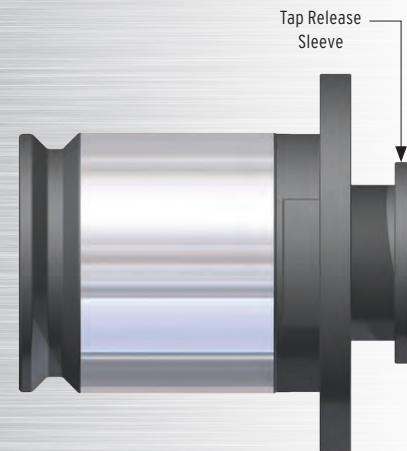
If, for some reason a tap sticks in a hole, the set screw will allow the tap to pull out of the adapter without damaging the part, tapping head or tap. Grinding flats on the tap shank overrides this safety feature.



NUMERTAP® 100, 200, 300, & 7716 QR ADAPTERS

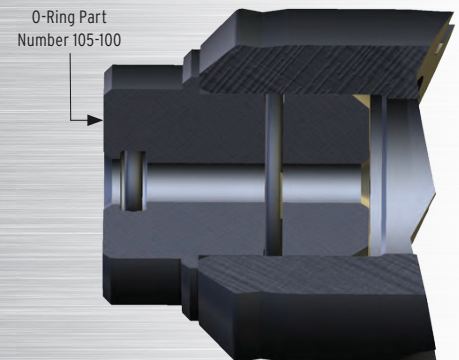
1. Push back the tap release sleeve.
2. Insert the tap into the adapter and twist until the square on the tap is aligned with the square in the adapter. Push back until the adapter is fully seated against the shoulder of the square.

Both fine and course pitch taps are used in the same adapters. Left or right hand taps can be used in any NUMERTAP® system without alteration.



COOLANT FED 700, 770 ADAPTERS

When used in through-spindle-coolant applications, coolant fed NUMERTAP® units must be used with coolant fed tap adapters. Coolant fed tap adapters feature a sealing plug at the back. The "O" ring in the ID of the plug should be periodically checked for cuts or tears. If damage is noted, the "O" ring should be replaced.



TAP INTO SAVINGS!

Parlec's Tapping systems provide superior application with the Numertap® system 770 providing the largest range of tapping capabilities available. Rigid, Tension Only and Tension and Compression systems are standard, along with Coolant or Coolant Groove Adapters with up to 6" extension length—just what you would expect from the worldwide leader in tooling and presetting solutions.

- **Full Line**
Three systems for synchronous tapping cycles.
- **Range and Versatility**
Largest range in a single tapping head (#6 - 1 5/8").
- **Popular Bilz Style**
Offered in addition to the rugged Numertap systems.
- **Standard Options**
Coolant-groove or coolant-through.
- **Adapters**
Extended-length adapters for special applications.
- **Flexibility**
Tap collets available for use in tapping heads and collet chucks.



PRECISION MODULAR BORING:

- 90° and 180° adjustable
- Automatic tool change
- Manual mounted heads
- Single and double output
- Heavy duty steel & lightweight aluminum bodies
- Modular design for easy application retool

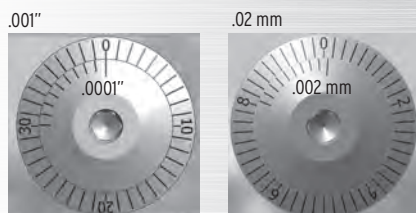
Features and Benefits

206 Selection Guide

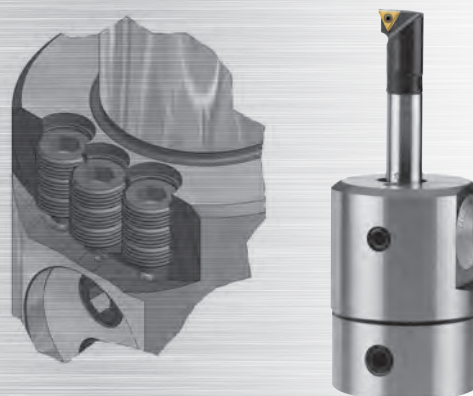
BORING FEATURES BRING BENEFITS!

SMALL DIAMETER BORING SYSTEMS

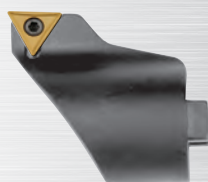
- Boring bar receiver telescopes to minimize overhang.
- Balanced Modular Boring Bars and Noses available as standard combined with the balanceable head for extreme high velocity boring.



A .0001" (.002 mm) Vernier is standard on all finish heads eliminating the need to purchase expensive heads



PRECISION FINISH BORING SYSTEMS



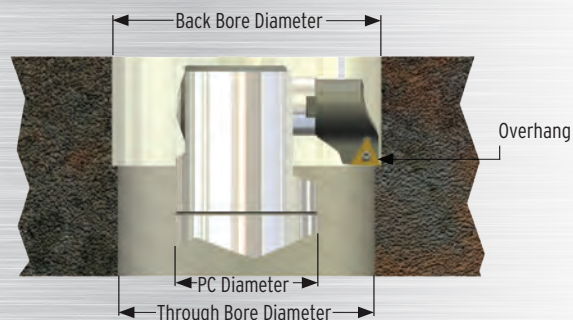
Extended length insert holders allow expansion of the boring range

Rigidity

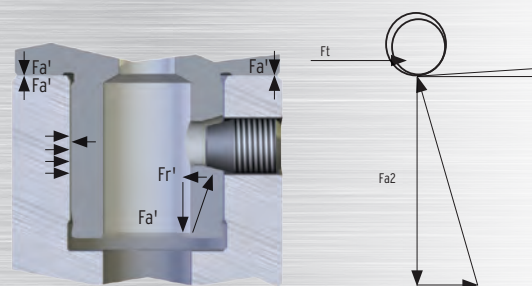
- Created by Force - The face to face clamping forces are equal to the axial force F_a . Precision .0002" on Diameter.
- Orientation - The cross pin orientates the PC screw and transmits extreme forces.

Self Tightening

- The torsional cutting forces are primarily transmitted by the friction between the matching faces.
- Any remaining torque will result in an additional wedge action between the locking screw and inner member.
- Due to very small resulting wedge angle, any increased torsional force (F_f) will be transformed into very strong axial clamping force (F_{a2})



THE PC CONNECTION



Features and Benefits

UNIQUE COOLANT DELIVERY → DIRECT TO THE CUTTING EDGE!



Tool life and chip form are maximized by directed high pressure coolant

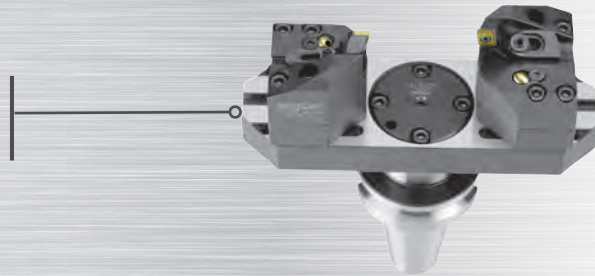
TWIN BORE FOR HEAVY METAL REMOVAL RATES

Individually and easily adjusted cutting tips allow for balanced or step cutting from .95" (24 mm) to over 23" (600 mm) resulting in maximum metal removal rates.

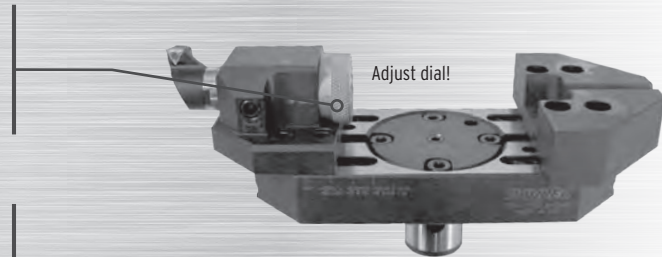


LARGE DIAMETER BORING SYSTEM

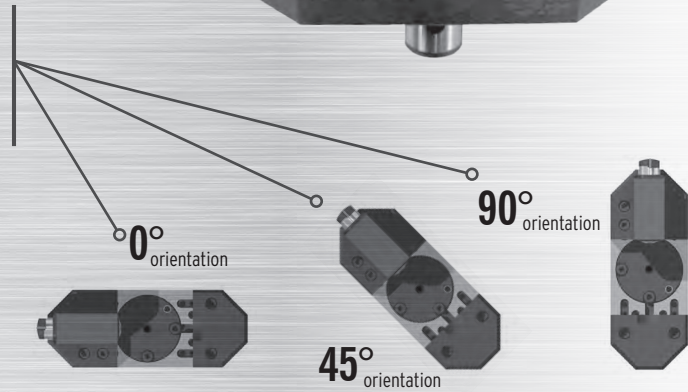
Inverted assembly allows system to be used to bore OD's utilizing twin bore or precision finish.



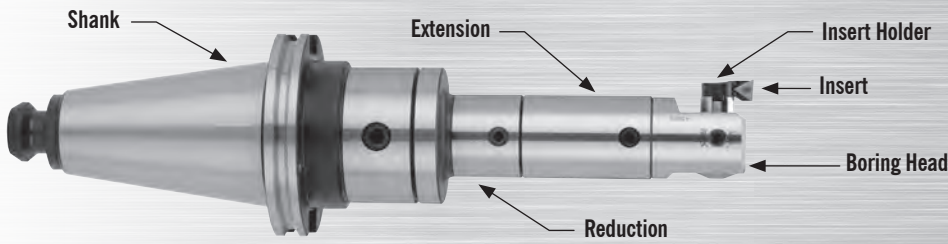
Precision counter balanced finish boring system for large diameters. Large .0005" (.02 mm) dial makes easy and accurate diameter adjustments.



PC Extension Base Couplers connect the slide directly to the shank eliminating an extra connection. The system allow the tool tip setup to 0, 45 or 90 degrees to allow for tool carousel clearance.



PC Connection



The force F_r is created by tightening the PC screw. This results in line contact seating with high repeatable precision (.0002" on diameter). The geometry of the screw and mating hole in the male pilot creates the resultant force F_a .

$$F_a = 3.7 \times F_r$$

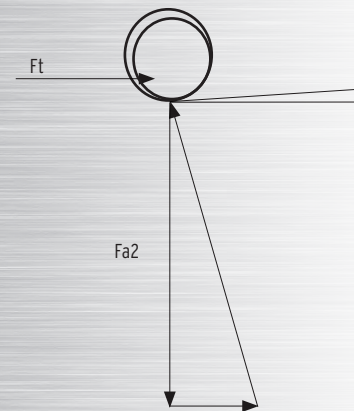
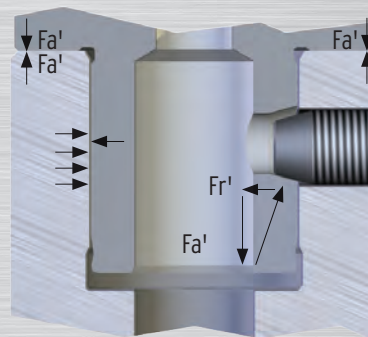
The face to face clamping forces $F_{a'}$ are equal to the axial force F_a .

The torsional cutting forces are primarily transmitted by the friction between the mating faces. Any remaining torque will result in an additional wedge action between the locking screw and the inner member. Due to the very small resulting wedge angle any increased torsional force F_t will be transformed into a very strong axial clamping force F_{a2} .

The cross pin (not shown) helps in alignment of the PC screw and prevents over tightening under heavy torsional loads.

CONNECTION DIAMETER

PC Size	Diameter"	MM
PC2	.94	24
PC3	1.22	31
PC4	1.54	39
PC5	1.97	50
PC6	2.52	64
PC7	3.54	90



PC SCREWS

Part Number	Connection Size	Wrench	Tightening Torque
880-002	PC2	018-102	25 in. lbs.
880-003	PC3	018-103	42 in. lbs.
880-004	PC4	018-104	84 in. lbs.
880-005	PC5	018-105	168 in. lbs.
880-006	PC6	018-106	336 in. lbs.
880-007	PC7	018-107	840 in. lbs.



PC Screw 880-006 shown here.

Quotation Request Sheet

CONTACT INFORMATION

For quick response, just photocopy this page, complete all information (please include Part Print where appropriate) and simply FAX back to Parlec at 1-800-866-5917

Company _____			
Contact Name _____		Title _____	
Business Address _____	City _____	State _____	Zip _____
Phone _____	Fax _____	Email _____	

BORING RANGE: .078" - 26.35" (2 - 672 MM)

A Finish Bore Diameter	A Finish Bore Tolerance	B Starting Diameter	C Gage Length	D Access Length	E Bore Depth	F Access Diameter

Work piece Material _____ Shank Size & Type _____

Hardness _____ Machine Tool Make _____

Machine Tool Model _____

COOLANT

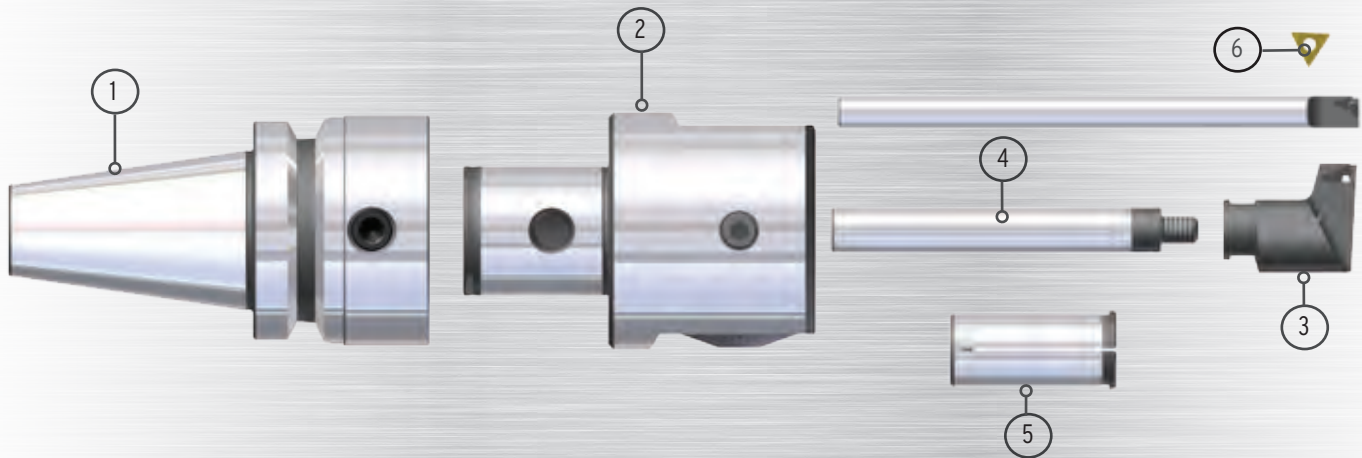
Through-Spindle Flange Entry Flood

RMS

Interrupted Cut Through-Holes Bottom-Holes

Product Tree Small Diameter

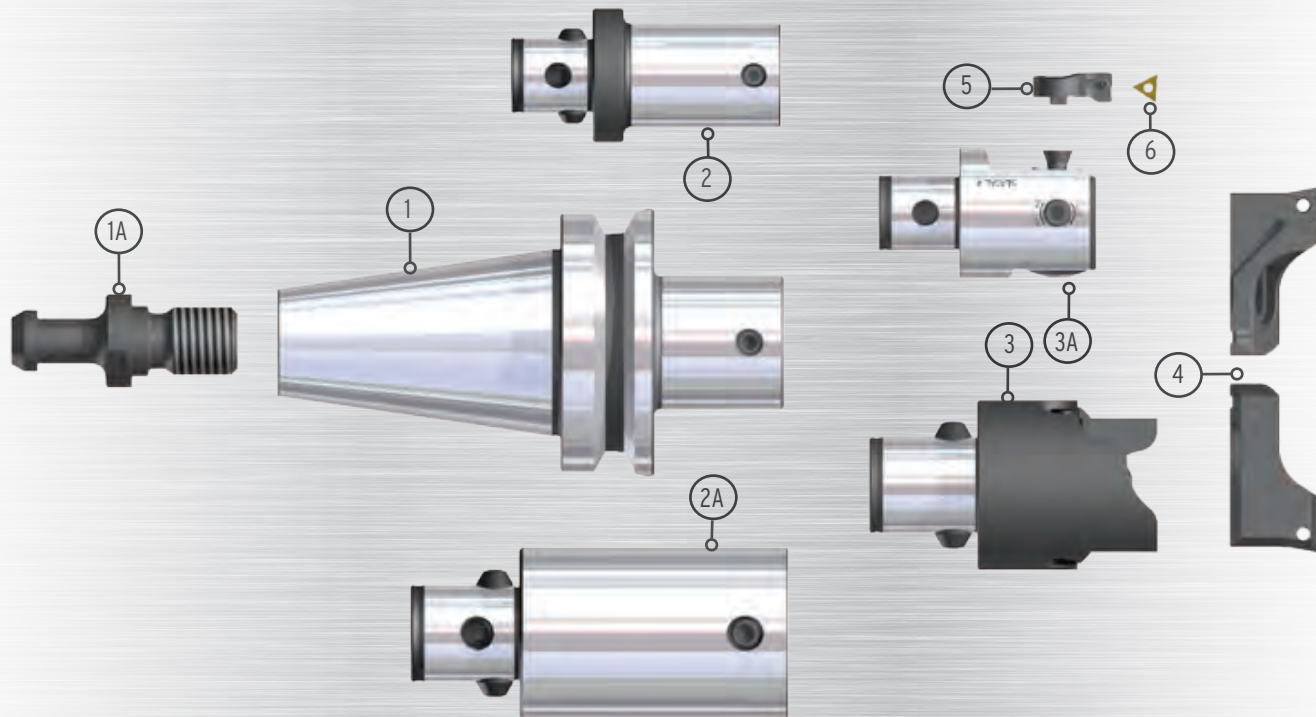
210 Selection Guide



.078" - 1.89" (2-48 MM) SMALL DIAMETER BORING RANGE TREE

Component	Selection Criteria	Catalog Page	
1	Modular Shank	Machine tool taper and projection requirement	Page 212–215
2	Small Diameter Finish Head	Telescoping bar and balance capability make is the right choice for boring small diameters	Page 224
3	Modular Boring Noses	Allows the diameter to be extended with less expense in boring bars. All noses are balanced and coolant through	Page 225
4	Boring Bar	Available as modular or solid for smaller diameters. Steel and Carbide with coolant through standard on all modular style.	Page 226
5	Reduction Bushing	Select to reduce the bore through receiver to the appropriate size boring bar	Page 226
6	Inserts	Select based on geometry of insert holder, material of bore and radius	Page 242–249

Product Tree Roughing and Finishing

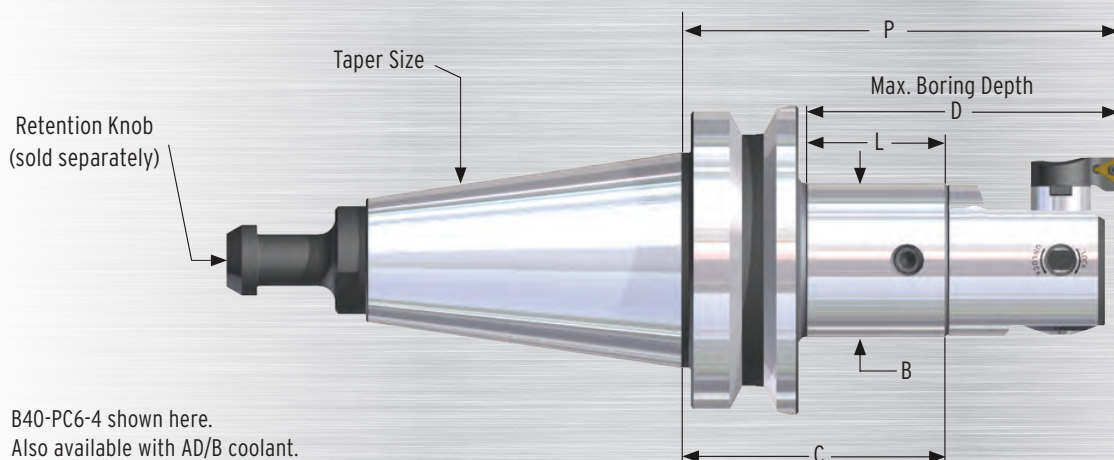


.98” - 6.00” (25-152.4 MM) ROUGH AND FINISH BORING RANGE TREE

	Component	Selection Criteria	Catalog Page
1	Modular Shank	Machine tool taper and projection requirement	Page 212–215
1A	Retention Knob	Machine tool specific	Page 108–110
2	Extension	Used to extend the reach of a boring assembly	Page 216
2A	Reduction	Used to extend the length to diameter ratio when reach and not clearance is the issue	Page 216
3	Twin Rough Boring Head	Select when metal removal is the goal and bore tolerance is larger. Setting on a presetter will provide accurate bore but adjustment for insert wear is not easily done at the machine.	Page 218
3A	Precision Finish Head	Select when much less material removal is required, such as after roughing, and precision and ease of adjustment are the main critical requirement.	Page 230
4	Twin Bore Insert Holder (pair)	Select by bore configuration and size.	Page 219
5	Precision Finish Insert Holder	Select by bore size, use size 1 for maximum bar rigidity	Page 231
6	Inserts	Select based on geometry of insert holder, material of bore and radius	Page 246–249

Modular Shanks

212 BT Shanks



B40-PC6-4 shown here.
Also available with AD/B coolant.

30 TAPER

Part Number	Connection Size	B" (mm)	C"(mm)	D" (mm)	L" (mm)	P*" (mm)	Weight lbs. (kg)
B30-PC4-2	PC4	1.54 (39)	1.75 (44.5)	2.24 (57)	0.76 (19.3)	3.60 (91.5)	1. (2.2)

40 TAPER

Part Number	Connection Size	B" (mm)	C"(mm)	D" (mm)	L" (mm)	P*" (mm)	Weight lbs. (kg)
B40-PC2-4	PC2	.94 (24)	3.80 (96.5)	4.12 (104.6)	2.64 (67)	5.28 (134.1)	2.5 (1.1)
B40-PC3-4	PC3	1.22 (31)	3.70 (94)	4.15 (105.4)	2.54 (64.5)	5.31 (135)	2.6 (1.2)
B40-PC3-5	PC3	1.22 (31)	4.80 (122)	5.25 (133.3)	3.64 (92.5)	6.41 (163)	3.2 (1.5)
B40-PC4-3	PC4	1.54 (39)	2.56 (65)	3.25 (82.5)	1.40 (35.5)	4.41 (112)	2.8 (1.3)
B40-PC4-5	PC4	1.54 (39)	4.53 (115)	5.21 (132.3)	3.36 (85.4)	6.38 (162)	3.6 (1.6)
B40-PC5-3	PC5	1.97 (50)	2.16 (55)	3.24 (82.3)	1.00 (25.4)	4.40 (112)	2.8 (1.3)
B40-PC5-6	PC5	1.97 (50)	5.31 (135)	6.37 (162)	4.13 (105)	7.55 (192)	5.8 (2.7)
B40-PC6-4	PC6	2.52 (64)	2.40 (61)	3.91 (99.3)	1.12 (28.5)	5.19 (132)	3.1 (1.4)
B40-PC6-6	PC6	2.52 (64)	4.76 (121)	6.43 (163)	3.64 (92.5)	7.55 (192)	6.5 (3)

50 TAPER

Part Number	Connection Size	B" (mm)	C"(mm)	D" (mm)	L" (mm)	P*" (mm)	Weight lbs. (kg)
B50-PC2-4	PC2	.94 (24)	4.15 (105.4)	4.03 (102.4)	2.54 (64.5)	5.63 (143)	7.7 (3.5)
B50-PC2-5	PC2	0.94 (24)	4.98 (126.5)	4.84 (123)	3.36 (85.3)	6.46 (164)	9.1 (4.2)
B50-PC3-4	PC3	1.22 (31)	4.00 (101.6)	4.03 (102.4)	2.40 (61)	5.63 (143)	7.7 (3.5)
B50-PC3-6	PC3	1.22 (31)	5.98 (152)	5.97 (151.6)	4.36 (110.8)	7.49 (190)	9.8 (4.5)
B50-PC4-4	PC4	1.54 (39)	3.78 (96)	4.03 (102.4)	2.18 (55.4)	5.63 (143)	8.1 (3.7)
B50-PC4-6	PC4	1.54 (39)	6.14 (156)	6.37 (161.8)	4.52 (114.8)	7.99 (203)	10.5 (4.8)
B50-PC4-8	PC4	1.54 (39)	7.28 (185)	7.51 (190.7)	5.66 (143.8)	9.13 (232)	11 (5)
B50-PC5-4	PC5	1.97 (50)	3.38 (86)	4.03 (102.4)	1.79 (45.5)	5.63 (143)	8.1 (3.7)
B50-PC5-8	PC5	1.97 (50)	6.89 (175)	7.51 (190.7)	5.27 (134)	9.13 (232)	12.2 (5.6)
B50-PC5-10	PC5	1.97 (50)	9.25 (235)	9.87 (250)	7.63 (194)	11.49 (292)	14.2 (6.5)
B50-PC6-4	PC6	2.52 (64)	2.84 (72)	4.03 (102.4)	1.24 (31.5)	5.63 (143)	8.8 (4)
B50-PC6-6	PC6	2.52 (64)	5.19 (132)	6.36 (161.5)	3.47 (88)	7.98 (202.7)	12.2 (5.6)
B50-PC6-8	PC6	2.52 (64)	6.34 (161)	7.51 (190.7)	4.72 (120)	9.13 (232)	13.7 (6.2)
B50-PC6-10	PC6	2.52 (64)	9.00 (228.6)	10.19 (259)	7.40 (188)	11.79 (300)	15.8 (7.2)
B50-PC6-12	PC6	2.52 (64)	11.06 (281)	12.23 (310.6)	9.44 (240)	13.85 (352)	21.2 (9.7)

*Compute "P" dimensions by adding "C" dimensions of all components used. Maximum bore depth "D" may be increased by using extension adapters.

Modular Shanks

V-Flange Shanks

40 TAPER

Part Number	Part Number with Flange Coolant***	Connection Size	B" (mm)	C" (mm)	D" (mm)	L" (mm)	P** (mm)	Weight lbs. (kg)
C40-PC2-2	-	PC2	.944 (24)	2.07 (52.6)	2.00 (50.8)	.56 (14.2)	3.54 (90)	2.4 (1.1)
C40-PC2-3	-	PC2	.944 (24)	3.33 (84.6)	3.15 (80)	1.95 (49.5)	4.80 (122)	2.5 (1.1)
C40-PC2-4	-	PC2	.944 (24)	4.11 (104.5)	3.94 (100)	2.74 (69)	5.59 (142)	2.6 (1.2)
C40-PC3-3	-	PC3	1.22 (31)	3.15 (80)	3.20 (81.3)	1.78 (45.2)	4.76 (121)	2.6 (1.2)
C40-PC3-5	-	PC3	1.22 (31)	5.12 (130)	5.57 (141.5)	3.74 (95)	6.73 (171)	3.3 (1.5)
C40-PC4-1	-	PC4	1.75 (44.5)	1.50 (38.1)	1.75 (44.5)	-	3.23 (82)	2.2 (1)
C40-PC4-3	C40B-PC4-3	PC4	1.54 (39)	2.87 (73)	3.15 (80)	1.50 (38.1)	4.72 (120)	2.7 (1.2)
C40-PC4-6	-	PC4	1.54 (39)	6.02 (153)	6.30 (160)	4.26 (108.2)	7.87 (200)	4.3 (2.0)
C40-PC5-3	-	PC5	1.97 (50)	2.48 (63)	3.15 (80)	1.11 (28.2)	4.72 (120)	2.8 (1.3)
C40-PC5-6	-	PC5	1.97 (50)	5.63 (143)	6.30 (160)	4.26 (108.2)	7.87 (200)	5.5 (2.5)
C40-PC6-3**	C40B-PC6-3	PC6	2.52 (64)	2.00 (50.8)	3.42 (87)	.63 (16)	4.80 (122)	3.1 (1.4)
C40-PC6-4	C40B-PC6-4	PC6	2.52 (64)	2.72 (69)	3.94 (100)	1.34 (8.6)	5.51 (140)	3.3 (1.5)
C40-PC6-6	-	PC6	2.52 (64)	5.08 (129)	6.30 (160)	3.70 (94)	7.87 (200)	6.3 (2.9)

50 TAPER

Part Number	Part Number with Flange Coolant***	Connection Size	B" (mm)	C" (mm)	D" (mm)	L" (mm)	P** (mm)	Weight lbs. (kg)
C50-PC2-2	-	PC2	.94 (24)	2.07 (52.6)	2.00 (50.8)	.56 (14.2)	3.54 (90)	7.0 (3.2)
C50-PC2-4	-	PC2	.94 (24)	4.11 (104.5)	3.94 (100)	2.74 (69)	5.59 (142)	7.0 (3.2)
C50-PC2-5	-	PC2	.94 (24)	5.29 (134.4)	5.12 (130)	3.92 (99.5)	6.77 (122)	7.3 (3.3)
C50-PC3-4	-	PC3	1.22 (31)	3.94 (100)	4.39 (111.5)	2.56 (65)	5.55 (141)	7.7 (3.5)
C50-PC3-5	-	PC3	1.22 (31)	5.12 (130)	5.57 (141.5)	3.74 (95)	6.73 (171)	7.7 (3.5)
C50-PC3-6	-	PC3	1.22 (31)	6.30 (160)	6.13 (155.7)	4.30 (109)	7.91 (201)	8.1 (3.7)
C50-PC4-4	C50B-PC4-4	PC4	1.54 (39)	3.61 (91.7)	3.94 (100)	2.24 (57)	5.46 (139)	7.6 (3.5)
C50-PC4-6	-	PC4	1.54 (39)	6.02 (153)	6.30 (160)	4.65 (118)	7.87 (200)	8.7 (4)
C50-PC4-8	-	PC4	1.54 (39)	7.60 (193)	7.88 (200)	6.22 (158)	9.45 (240)	9.5 (4.3)
C50-PC5-4	-	PC5	1.97 (50)	3.27 (83)	3.94 (100)	1.89 (48)	5.51 (140)	7.8 (3.5)
C50-PC5-6	-	PC5	1.97 (50)	5.63 (143)	6.30 (160)	4.26 (108.2)	7.87 (200)	9.7 (4.3)
C50-PC5-8	-	PC5	1.97 (50)	7.20 (183)	7.88 (200)	5.83 (148)	9.45 (240)	10.9 (5)
C50-PC5-10	-	PC5	1.97 (50)	9.57 (243)	10.24 (260)	8.19 (208)	11.81 (300)	12.8 (5.8)
C50-PC6-4	C50B-PC6-4	PC6	2.52 (64)	2.72 (69)	3.94 (100)	1.34 (34)	5.51 (140)	7.7 (3.5)
C50-PC6-6	-	PC6	2.52 (64)	5.08 (129)	6.30 (160)	3.70 (94)	7.87 (200)	10.8 (4.9)
C50-PC6-8	-	PC6	2.52 (64)	6.65 (169)	7.88 (200)	5.28 (134)	9.45 (240)	12.8 (5.8)
C50-PC6-10	-	PC6	2.52 (64)	9.02 (229)	10.24 (260)	7.64 (194)	11.81 (300)	15.9 (7.2)
C50-PC6-12	-	PC6	2.52 (64)	11.38 (289)	12.60 (320)	10.00 (254)	14.17 (360)	19.1 (8.7)
C50-PC7-6	-	PC7	3.54 (90)	3.27 (83)	6.30 (160)	1.89 (48)	7.87 (200)	10.0 (4.6)
C50-PC7-8	-	PC7	3.54 (90)	5.27 (134)	8.30 (210)	3.89 (99)	9.87 (251)	15.3 (7)
C50-PC7-10	-	PC7	3.54 (90)	7.20 (183)	10.24 (260)	5.83 (148)	11.81 (300)	20.3 (9.2)

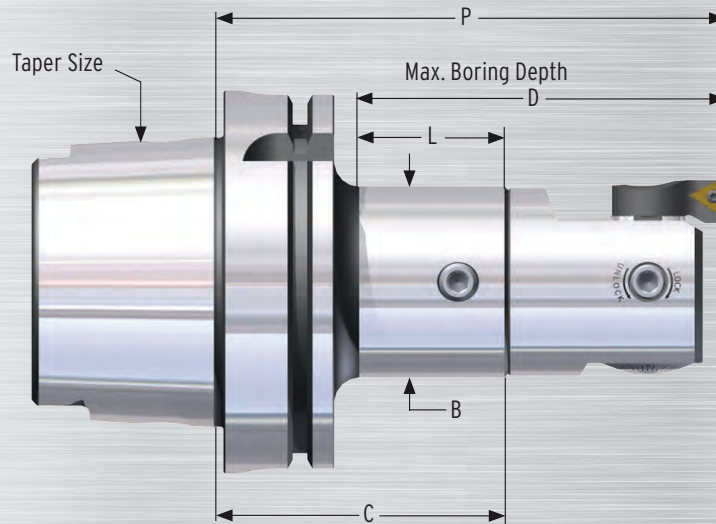
60 TAPER

Part Number	Connection Size	B"(mm)	C"(mm)	D"(mm)	L"(mm)	P** (mm)	Weight lbs. (kg)
C60-PC6-4	PC6	2.52 (64)	3.10 (78.8)	4.20 (106.7)	1.60 (40.6)	5.90 (150)	22.6 (10.3)
C60-PC6-12	PC6	2.52 (64)	11.10 (282)	12.20 (310)	9.60 (244)	13.90 (353)	34.0 (15.5)
C60-PC7-10	PC7	3.54 (90)	7.30 (185.4)	10.22 (260)	5.80 (147.3)	11.91 (303)	35.2 (16)

* Compute "P" dimensions by adding "C" dimensions of all components used. Maximum bore depth "D" may be increased by using extension adapters. ** Deviates from ANSI B5.50 1994 - No clearance for some tool changers. *** Other sizes available on request.

Modular Shanks

214 HSK Shanks



HSK 63A

Part Number	Connection Size	B" (mm)	C" (mm)	D" (mm)	L" (mm)	P*" (mm)	Weight lbs. (kg)
H63A-PC2-73	PC2	.94 (24)	3.52 (89.5)	3.74 (95)	2.26 (57.5)	5.00 (127)	2.0 (.9)
H63A-PC3-103	PC3	1.22 (31)	3.94 (100)	4.29 (109)	2.68 (68)	5.55 (141)	2.2 (1)
H63A-PC4-65	PC4	1.54 (39)	2.50 (63.5)	3.09 (78.5)	1.24 (31.5)	4.35 (110.5)	2.3 (1)
H63A-PC4-178	PC4	1.54 (39)	6.00 (152.4)	6.59 (167.4)	4.74 (120.4)	7.85 (199.4)	4.0 (1.9)
H63A-PC5-105	PC5	1.97 (50)	3.26 (83)	4.25 (108)	2.01 (51)	5.50 (140)	3.1 (1.4)
H63A-PC6-100	PC6	2.52 (64)	3.25 (82.3)	4.78 (121.5)	1.99 (50.5)	6.04 (153.5)	3.4 (1.5)
H63A-PC6-147	PC6	2.52 (64)	5.13 (130)	6.65 (169)	3.86 (98)	7.92 (201)	6.0 (2.8)

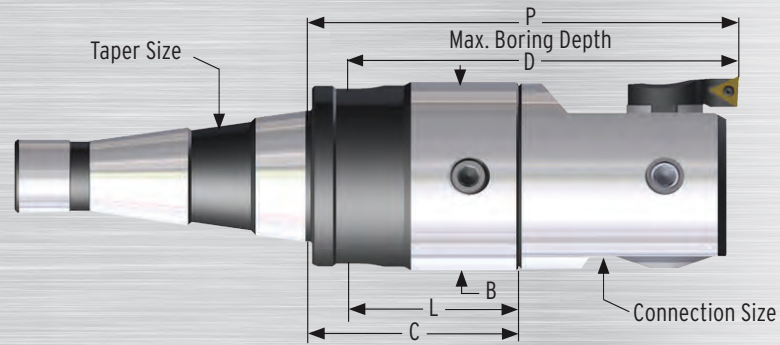
HSK 100A

Part Number	Connection Size	B" (mm)	C" (mm)	D" (mm)	L" (mm)	P*" (mm)	Weight lbs. (kg)
H100A-PC2-107	PC2	.94 (24)	4.51 (114.5)	4.61 (117)	3.13 (74.5)	5.98 (152)	2.0 (.9)
H100A-PC3-122	PC3	1.22 (31)	4.92 (125)	5.16 (131)	3.54 (90)	6.53 (166)	6.4 (2.9)
H100A-PC4-65	PC4	1.54 (39)	2.50 (63.5)	2.97 (75.5)	1.12 (28.5)	4.35 (110.5)	6.2 (2.8)
H100A-PC4-182	PC4	1.54 (39)	7.00 (178)	7.48 (190)	5.63 (143)	8.85 (225)	8.4 (3.8)
H100A-PC5-122	PC5	1.97 (50)	4.25 (108)	5.12 (130)	2.87 (73)	6.49 (165)	7.7 (3.5)
H100A-PC6-100	PC6	2.52 (64)	3.25 (82.5)	4.67 (118.5)	1.87 (47.5)	6.04 (153.5)	7.2 (3.3)
H100A-PC6-190	PC6	2.52 (64)	6.69 (170)	8.11 (206)	5.31 (135)	9.48 (241)	11.9 (5.4)

Modular Shanks

NMTB Shanks, Straight Shanks & Heavy Metal Extensions

215

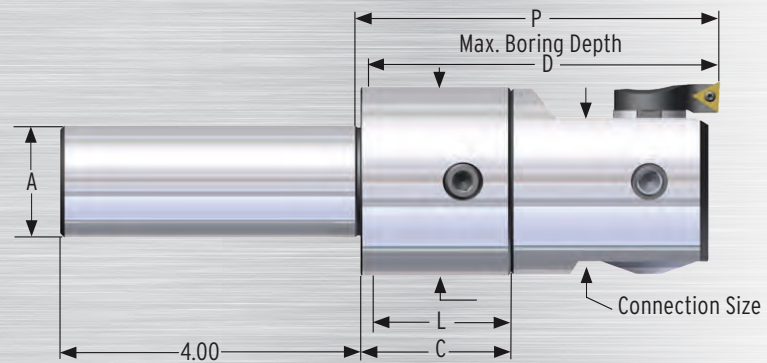


40 TAPER

Part Number	Connection Size	B	C	D	L	P*	Weight lbs. (kg)
N40-PC4-3	PC4	1.54	1.93	3.20	1.35	3.78	2.1 (.95)
N40-PC6-4	PC6	2.52	2.17	4.14	1.34	4.97	6.4 (2.9)

50 TAPER

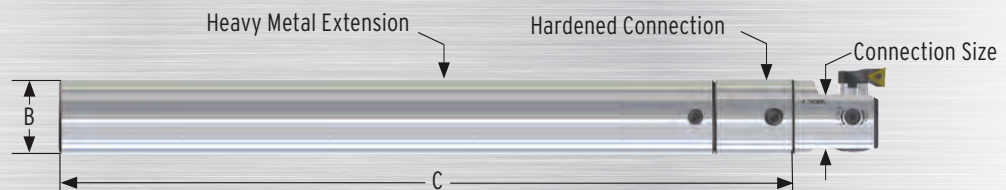
Part Number	Connection Size	B	C	D	L	P*	Weight lbs. (kg)
N50-PC4-6	PC4	1.54	5.24	6.30	4.45	7.09	7.6 (3.5)
N50-PC6-4	PC6	2.52	1.93	3.94	1.15	4.72	6.4 (2.9)
N50-PC6-12	PC6	2.52	10.59	12.60	9.81	13.38	17.8 (8.1)
N50-PC7-6	PC7	3.54	2.48	5.87	1.26	7.09	8.1 (3.7)



STRAIGHT SHANKS

Part Number	Connection Size	A	B	C	D	L	P*	Weight lbs. (kg)
S12-PC4-3	PC4	1.25	1.54	2.00	3.75	1.90	3.85	2.0 (.9)
S12-PC6-4	PC6	1.25	2.52	2.00	4.70	1.90	4.80	3.1 (1.4)

Maximum bore depth "D" may be increased by using extension adapters. *Compute "P" dimensions by adding "C" dimensions of all components used.
 **For Weldon flats, add "W" after SXX, i.e., S12W-PC4-3. Other shank configurations available on request.



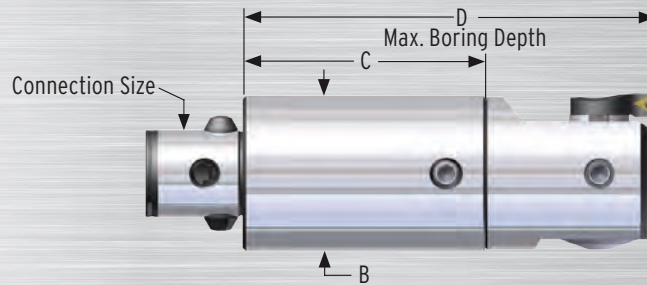
HEAVY METAL EXTENSIONS

Part Number	Connection Size	B	C	Weight lbs. (kg)
PC2-094HM11	PC2	.937	11.42	3.9 (1.8)
PC3-125HM14	PC3	1.250	13.78	9.0 (4.0)
PC4-150HM15	PC4	1.500	14.75	13.0 (5.9)

*Not recommended for use on lathes with twin bore units. Consult Parlec's Applications department.

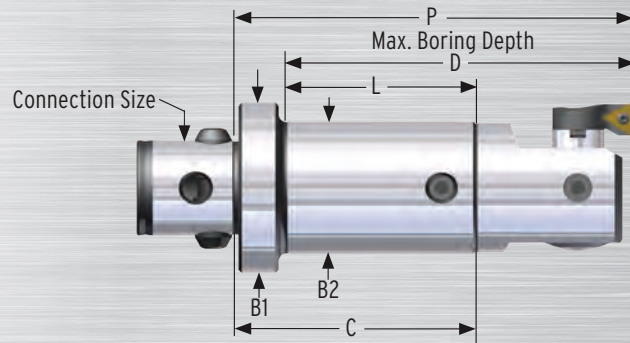
Twin Bore Roughing System

216 Extensions & Reductions



EXTENSIONS

Part Number	Connection Size	B" (mm)	C" (mm)	Weight lbs. (kg)
PC2-PC2E1	PC2	.94 (24)	1.18 (30)	.3 (.2)
PC2-PC2E2	PC2	.94 (24)	1.77 (45)	.4 (.2)
PC3-PC3E1	PC3	1.22 (31)	1.18 (30)	.4 (.2)
PC3-PC3E2	PC3	1.22 (31)	1.77 (45)	.5 (.3)
PC4-PC4E1	PC4	1.54 (39)	1.57 (40)	.8 (.4)
PC4-PC4E2	PC4	1.54 (39)	2.36 (60)	1.1 (.5)
PC5-PC5E2	PC5	1.97 (50)	2.36 (60)	1.9 (.9)
PC5-PC5E3	PC5	1.97 (50)	3.54 (90)	2.8 (1.3)
PC6-PC6E2	PC6	2.52 (64)	2.36 (60)	3.0 (1.4)
PC6-PC6E4	PC6	2.52 (64)	3.94 (100)	5.0 (2.3)
PC7-PC7E4	PC7	3.54 (90)	3.94 (100)	9.9 (4.5)
PC7-PC7E6	PC7	3.54 (90)	6.30 (160)	17.0 (7.73)



REDUCTIONS

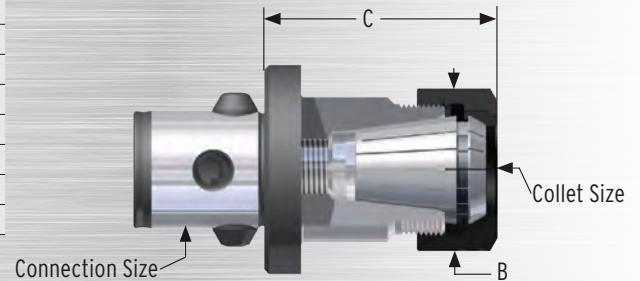
Part Number	A (Connection)	E (Connection)	B1	B2	C" (mm)	D" (mm)	L (Max.)	Weight lbs. (kg)
PC3-PC2R1	PC3	PC2	1.22	.945	1.36 (34.5)	2.36 (60)	.965	.4 (.2)
PC4-PC2R2	PC4	PC2	1.54	.945	2.03 (51.5)	2.95 (75)	1.56	.6 (.3)
PC4-PC3R2	PC4	PC3	1.54	1.220	1.85 (47)	2.95 (75)	1.38	1.0 (.5)
PC5-PC2R3	PC5	PC2	1.97	.945	3.21 (81.5)	3.94 (100)	2.54	1.1 (.5)
PC5-PC3R3	PC5	PC3	1.97	1.220	3.03 (77)	3.94 (100)	2.36	1.3 (.6)
PC5-PC4R2	PC5	PC4	1.97	1.535	2.76 (70)	3.94 (100)	2.09	1.6 (.8)
PC6-PC2R3	PC6	PC2	2.52	.945	3.76 (95.5)	4.53 (115)	3.13	1.8 (.9)
PC6-PC3R3	PC6	PC3	2.52	1.220	3.58 (91)	4.53 (115)	2.95	2.1 (1)
PC6-PC3R5	PC6	PC3	2.52	1.220	5.35 (136)	6.30 (160)	4.72	2.6 (1.2)
PC6-PC4R1	PC6	PC4	2.52	1.535	1.93 (49)	3.15 (80)	1.30	1.7 (.8)
PC6-PC4R3	PC6	PC4	2.52	1.535	3.31 (84)	4.53 (115)	2.68	1.3 (.6)
PC6-PC4R5	PC6	PC4	2.52	1.535	5.08 (129)	6.30 (160)	4.45	3.0 (1.4)
PC6-PC5R3	PC6	PC5	2.52	1.969	2.91 (74)	4.53 (115)	2.28	2.8 (1.3)
PC7-PC6R4	PC7	PC6	3.54	2.52	4.18 (106)	6.30 (160)	3.50	7.0 (3.2)

Twin Bore Roughing System

MODULAR COLLET CHUCK

Part Number	Connection		B	C	D	Screw Stop
	Size	Nut style				
PC4-16ER3	PC4	ER FLUSH	1.11	3.13	3.13	BS-20
PC4-16ER325	PC4	ER POWER	1.11	3.25	3.25	BS-20
PC4-20ER325	PC4	ER POWER	1.34	3.25	3.25	BS-09
PC4-25ER325	PC4	ER POWER	1.67	3.25	3.25	BS-11
PC4-32ER325	PC4	ER POWER	1.97	3.25	3.25	BS-18
PC6-10SC3	PC6	PG 100	2.44	3.25	3.25	BS-18
PC6-20ER340	PC6	ER POWER	1.34	3.40	3.40	BS-09
PC6-32ER340	PC6	ER POWER	1.97	3.40	3.40	BS-18

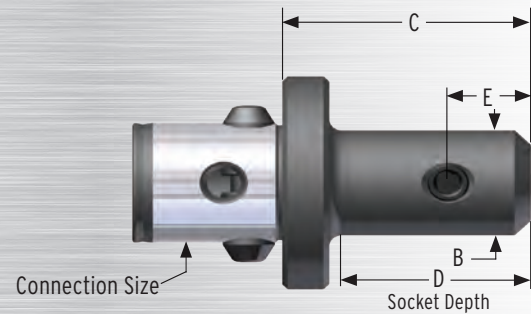
See ER Toolholding section for specification and accessories.



MODULAR END MILL HOLDERS

Part Number	Connection						
	Size	A SIZE	B	C	D	E	F
PC4-75EM3	PC4	.750	1.75	3.13	2.75	1.00	-
PC6-75EM3	PC6	.750	1.75	3.03	2.75	1.00	-
PC6-10EM3	PC6	1.000	2.00	3.28	2.75	1.00	1.12
PC6-12EM3	PC6	1.250	2.50	3.28	2.75	1.00	1.12

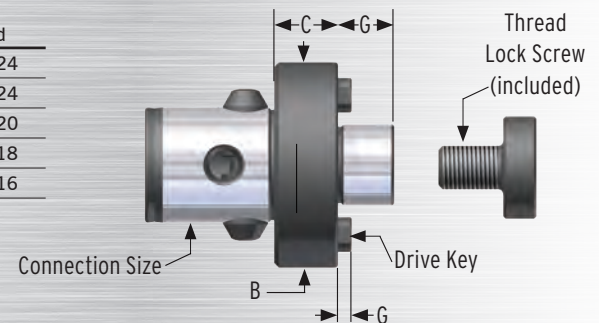
See EM Toolholding section for specification and accessories.



MODULAR SHELL MILL HOLDERS

Part Number	Connection						
	Size	A SIZE	B	C	G	Drive Key	Thread
PC4-75SM1	PC4	.750	1.75	0.78	0.69	0.31	3/8 - 24
PC6-75SM1	PC6	.750	2.52	0.78	0.69	0.31	3/8 - 24
PC6-10SM1	PC6	1.000	2.52	0.78	0.69	0.38	1/2 - 20
PC6-12SM1	PC6	1.250	2.75	1.03	0.69	0.50	5/8 - 18
PC6-15SM2	PC6	1.500	3.75	1.53	0.94	0.62	3/4 - 16

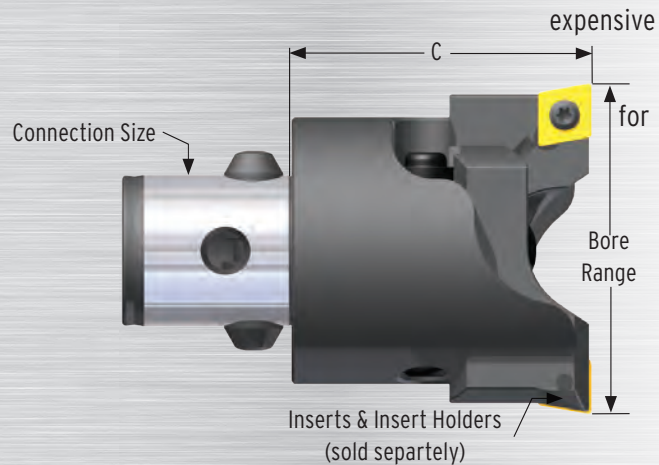
See SM Toolholding section for specification and accessories.



Twin Bore Roughing System

218 Twin Bore Roughing from .95" to 6.00" (25 mm to 152.4 mm)

- Independent height and diameter setting permits balanced cutting with production of almost perfectly round holes from the beginning, irrespective of core shifts.
- Two height balanceable cutting edges results in metal removal at rates almost 4 times that of a single cutter.
- Height adjustments are made with a cam that supports the insert holder where needed, at the furthest radial point.
- Each insert holder can be adjusted individually in diameter with a dial screw for fast, easy set-up operations.
- Balanced or stepped cutting can be done with the same set of insert holders permitting heavy stock removal and eliminating the need to purchase two sets of insert holders.
- Standard through-spindle coolant capability cools the insert and flushes chips.
- ISO standard inserts - requires no special inserts.
- Square SCMT insert holders with 6° lead through hole boring or extreme core shifts.
- Diamond CCMT insert holders for boring to a square holder, or deep bore lengths.
- Trigon WCMT insert holders for applications requiring heavy stock removal.



TWIN BORE ROUGHING

Part Number	Bore Range Min.	Bore Range Max.	Connection Size	Insert Holder Size	Body Diameter	C	Weight lbs. (kg)
PC2-4205	.95 (24.1)	1.31 (33.3)	PC2	21	.91 (23)	1.39 (33.5)	.2 (.1)
PC2-4205	1.13 (28.7)	1.48 (37.6)	PC2	22	.91 (23)	1.39 (33.5)	.2 (.1)
PC3-4305	1.27 (32.3)	1.70 (43.2)	PC3	31	1.18 (30)	1.57 (40)	.4 (.18)
PC3-4305	1.50 (38.1)	1.95 (49.5)	PC3	32	1.18 (30)	1.57 (40)	.4 (.18)
PC4-4405	1.58 (40)	2.17 (55.1)	PC4	41	1.50 (38)	1.85 (47)	.7 (.32)
PC4-4405	2.09 (53)	2.53 (64.3)	PC4	42	1.50 (38)	1.85 (47)	.7 (.32)
PC5-4505	2.06 (52.4)	2.73 (69.3)	PC5	51	1.93 (49)	2.24 (57)	1.4 (.64)
PC5-4505	2.58 (65.5)	3.30 (83.8)	PC5	52	1.93 (49)	2.24 (57)	1.4 (.64)
PC6-4605	2.61 (66.3)	3.48 (88.4)	PC6	61	2.48 (63)	2.79 (71)	2.8 (1.27)
PC6-4605	3.36 (85.3)	4.20 (106.7)	PC6	62	2.48 (63)	2.79 (71)	2.8 (1.27)
PC6-4605	4.10 (104.1)	4.86 (123.4)	PC6	63	2.48 (63)	2.79 (71)	2.8 (1.27)
PC6-4606	3.92 (99.6)	4.84 (123)	PC6	61	3.54 (90)	2.79 (71)	3.9 (1.78)
PC6-4606	4.68 (119)	5.54 (140.7)	PC6	62	3.54 (90)	2.79 (71)	3.9 (1.78)
PC6-4606	5.44 (138)	6.20 (157.4)	PC6	63	3.54 (90)	2.79 (71)	3.9 (1.78)
PC7-4705	3.92 (99.6)	4.84 (122.9)	PC7	61	3.54 (90)	4.60 (117)	10.6 (4.8)
PC7-4705	4.68 (119)	5.54 (140.7)	PC7	62	3.54 (90)	4.60 (117)	10.6 (4.8)
PC7-4705	5.44 (138)	6.20 (157.4)	PC7	63	3.54 (90)	4.60 (117)	10.6 (4.8)

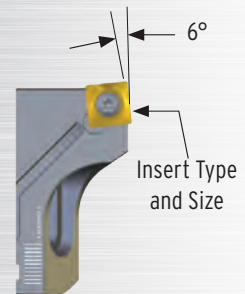
For use when reduced boring shaft diameter is required for clearance. PC Connection OD should not be larger than the starting diameter of the hole.

Twin Bore Roughing System

STYLE 1: FOR USE WITH SCMT INSERTS.

Part Number	Insert Holder Size	Insert Type and Size	Insert Screw	Insert Screw Wrench	Weight lbs. (kg)
4305-31S09	31	SCMT 09	028-906	018-008	.1 (.05)
4405-41S09	41	SCMT 09	028-906	018-008	.2 (.1)
4505-51S12	51	SCMT 12	028-907	018-009	.3 (.15)
4605-61S12	61	SCMT 12	028-907	018-009	.6 (.27)
4605-62S12	62	SCMT 12	028-907	018-009	.8 (.36)
4606-63S12	63	SCMT 12	028-907	018-009	1.0 (.45)

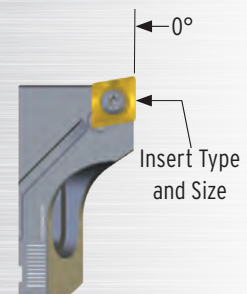
Designed for boring through holes, particularly in castings where core shift is a problem.



STYLE 2: FOR USE WITH CCMT INSERTS.

Part Number	Insert Holder Size	Insert Type and Size	Insert Screw	Insert Screw Wrench	Weight lbs. (kg)
4205-21C06	21	CCMT 06	028-925	018-007	.1 (.05)
4205-22C06	22	CCMT 06	028-905	018-007	.1 (.05)
4305-31C06	31	CCMT 06	028-905	018-007	.1 (.05)
4305-32C06	32	CCMT 06	028-905	018-007	.1 (.05)
4405-41C09	41	CCMT 09	028-906	018-008	.2 (.1)
4405-42C09	42	CCMT 09	028-906	018-008	.2 (.1)
4505-51C12	51	CCMT 12	028-907	018-009	.3 (.15)
4505-52C12	52	CCMT 12	028-907	018-009	.4 (.18)
4605-61C12	61	CCMT 12	028-907	018-009	.6 (.27)
4605-62C12	62	CCMT 12	028-907	018-009	.8 (.36)
4606-63C12	63	CCMT 12	028-907	018-009	1.0 (.45)

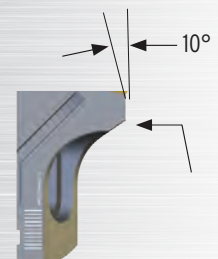
Designed for boring to square shoulders and deep bores. Also used when step cutting.



STYLE 3: FOR USE WITH WCMX INSERTS.

Part Number	Insert Holder Size	Insert Type and Size	Insert Screw	Insert Screw Wrench	Weight lbs. (kg)
4205-21W03	21	WCMX 03	028-905	018-007	.1 (.05)
4305-31W03	31	WCMX 03	028-905	018-007	.1 (.05)
4405-41W04	41	WCMX 04	028-905	018-007	.2 (.1)
4505-51W05	51	WCMX 05	028-908	018-003	.3 (.15)
4605-61W08	61	WCMX 08	028-906	018-008	.6 (.27)
4605-62W08	62	WCMX 08	028-906	018-008	.8 (.36)
4606-63W08	63	WCMX 08	028-906	018-008	1.0 (.45)

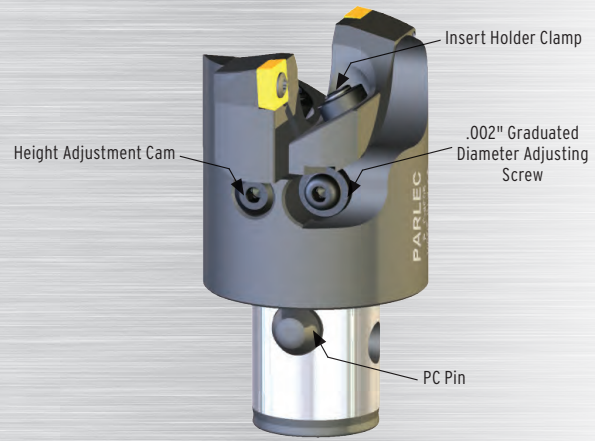
Designed for heavy stock removal at moderate horsepower.



Rough insert holders sold in pairs. Order inserts separately (see pages 246–249).

Twin Bore Roughing System

220 Components



TWIN BORING HEAD COMPONENTS

Part Number	*Diameter Adjust. Screw	*Insert Holder Clamp (Pair)	*Height Adjust. Cam (Pair)	*Wrench Kit	Spare Kit	PC Pin
PC2-4205	4205-11	4205-12	4205-13	4205-14	4205-10	PCP-002
PC3-4305	4305-11	4305-12	4305-13	4305-14	4305-10	PCP-003
PC4-4405	4405-11	4405-12	4405-13	4405-14	4405-10	PCP-004
PC5-4505	4505-11	4505-12	4505-13	4505-14	4505-10	PCP-005
PC6-4605	4605-11	4605-12	4605-13	4605-14	4605-10	PCP-006
PC6-4606	4605-11	4605-12	4605-13	4605-14	4605-10	PCP-006
PC7-4705	4605-11	4605-12	4605-13	4605-14	4605-10	PCP-007
7100-B460	4605-11	4605-12	4605-13	4605-14	4605-10	-

*(Incl.) in spare kit.

INSTALLING INSERT HOLDERS

1. Remove the two insert holder clamps and set aside.
2. Place the insert holders in the head, making sure the slot in the bottom of the insert holder engages the head of the diameter adjusting screw.
3. Install the insert holder clamps (cap screw on size two). Make sure that the nut is flush with the end of the screw.
4. Snug up the insert holder clamps.
5. It is recommended that the Parlec twin boring heads be adjusted on a tool presetter.

RECOMMENDED ROUGHING SPEEDS

STEELS

Material	BHN	TT / SN	VN	CT
CARBON STEEL C = 0.15%	125	300-450	600-800	650-1000
CARBON STEEL C = 0.35%	150	300-500	600-800	625-950
CARBON STEEL C = 0.70%	180-250	250-450	550-750	500-750
ALLOY STEEL 4000	125-200	300-500	550-750	500-750
ALLOY STEEL 5000	225	200-400	350-525	300-600
ALLOY STEEL 8000	300	200-400	300-525	350-475
STAINLESS STEEL, ANNEALED 400 SERIES	150-270	250-400	400-600	475-750
STAINLESS STEEL, ANNEALED 300 SERIES	150-220	300-425	350-500	550-650
CAST STEEL, LOW CARBON	150	200-325	450-650	400-550
CAST STEEL, LOW ALLOY	150-250	200-300	250-400	300-425

330BHN = Rc: 35
 250BHN = Rc: 24-25
 220BHN = Rc: 20

All values are in SFM.

OTHER MATERIALS

Material	BHN	TT / SN	AL / VN	AS	C2
MALLEABLE CAST IRON, FERRITIC	110-150	525-700	600-1000	400-900	150-350
MALLEABLE CAST IRON, PEARLITIC	150-270	250-400	400-800	300-800	100-250
GREY CAST IRON, LOW TENSILE	150-220	525-800	400-900	300-1000	200-400
GREY CAST IRON, HIGH TENSILE	200-330	350-600	400-700	300-600	150-300
NODULAR IRON, FERRITIC	125-230	300-500	400-900	450-900	150-375
NODULAR IRON, PEARLITIC	200-300	250-400	400-900	350-650	100-250
ALUMINUM ALLOYS	30-120	-	-	-	600-1200
ALUMINUM ALLOYS, CAST	100-130	-	-	-	600-1200

All values are in SFM.

ALLOWANCE & FEED RATES

Twin Boring Head	Material	Machining Allowance on diameter (Inches) DOC			For Best Finish	Feed Rates (IPR)*	
		Optimum	Min.	Max.		Min.	Max.
PC2-4205 (.94 – 1.34)	Steels	.10	.02	.14	.010	.008	.014
	Cast Iron	.16	.02	.24	.010	.006	.012
	Aluminum	.12	.02	.24	.010	.006	.012
PC3-4305 (1.26 – 1.70)	Steels	.12 - .14	.04	.16 - .18	.014	.012	.018
	Cast Iron	.20	.04	.28	.012	.008	.016
	Aluminum	.20	.04	.28	.014	.012	.018
PC4-4405 (1.58 – 2.17)	Steels	.14 - .16	.04	.18 - .20	.014	.012	.020
	Cast Iron	.24	.04	.31	.012	.012	.016
	Aluminum	.24	.04	.31	.014	.008	.018
PC5-4505 (2.06 – 3.30)	Steels	.24	.06	.35 - .47	.018	.012	.024
	Cast Iron	.39	.04	.55	.016	.012	.018
	Aluminum	.39	.06	.55	.018	.008	.024
PC6-4605 (2.61 – 6.00) PC6-4606 & PC7-4705	Steels	.28 - .39	.06	.35 - .47	.018	.012	.024
	Cast Iron	.47	.04	.55	.016	.008	.018
	Aluminum	.47	.04	.55	.018	.016	.024
ALL BIG BORE ABOVE 6.00	Steels	.28 - .39	.06	.35 - .47	.018	.012	.024
	Cast Iron	.47	.04	.55	.016	.008	.018
	Aluminum	.47	.04	.55	.018	.016	.024

*Feed rate is based on two cutting edges. When step cutting, multiply by .5.

Twin Bore Roughing System

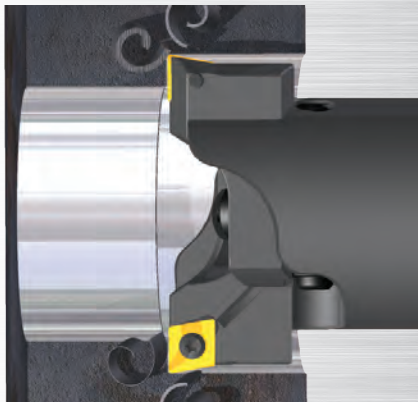


ADJUSTING FOR BALANCED CUTTING:

Balanced cutting allows both cutting edges to work simultaneously. A properly balanced twin cutter may be fed at almost four times the rate of a single cutter. Make sure the height cam is located with the reference mark (lowest point) in the vertical position as shown.

1. Loosen the insert holder clamps. Re-tighten enough to put drag on the insert holder.
2. Adjust the diameter by turning the adjusting screw. Always adjust in the clockwise direction.
3. Tighten the insert holder clamps.
4. Repeat for the second insert holder, adjusting both to $\pm .001"$ (.025) on the diameter.

Balanced cutting occurs when both inserts are set to exactly the same height. This height balancing is much more important than diametric balancing. A slight difference in height, even that caused by the insert tolerance, can have a dramatic effect upon the tool's performance. This is particularly true in the case of long chipping materials.



EXAMPLE OF UNBALANCED CUT:

- Feed rate .016 IPR (.4mm per rev).
- Insert "A" is .003" (.08) higher than insert "B." (The tolerance on an M style insert is .002"-.004".) (.05-.1)
- The material removed by insert "A" is .008" (.2) + .003" (.08) = .011" (.28)
- The material removed by insert "B" is .008" (.2) + .003" (.08) = .005" (.12)
- The chip taken by insert "A" is over twice as thick as that taken by insert "B".

The difference in cutting forces caused by the differences in insert height illustrated above can have the following effects on the bar's performance:

1. Possible wobble or chatter; extra load on the machine tool;
2. Generally, the bore diameter becomes larger than the set diameter;
3. Uniform chip formation is not possible, making it difficult to break and clear chips.

Maximum Allowable Setting Difference between inserts for best performance:

MAXIMUM SETTING DIFFERENCE

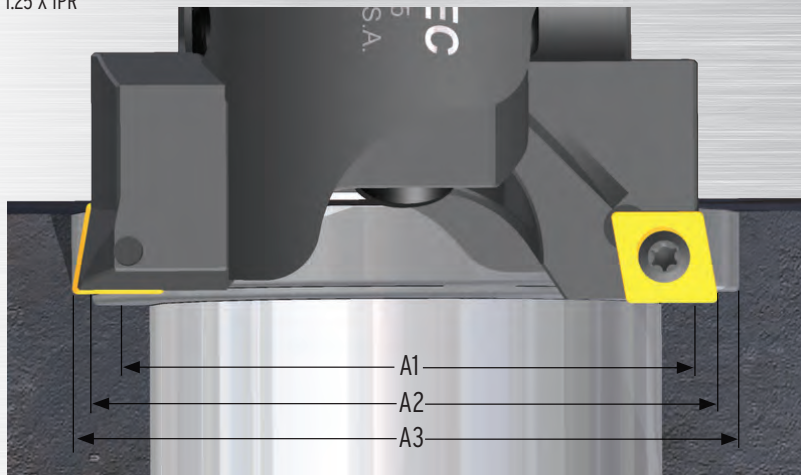
Bore Diameter Range" (mm)	Insert Height" (mm)	Cutting Diameter" (mm)
.95 – 1.31" (24.1 - 33.3)	.001 (.025)	.008 (.2)
1.26 – 1.74" (32.3 - 43.2)	.001 (.025)	.012 (.3)
1.58 – 2.17" (40 - 55.1)	.001 (.025)	.012 (.3)
2.06 – 2.83" (52.4 - 69.3)	.002 (.05)	.016 (.4)
2.61 – 6.00" (66.3- 150)	.002 (.05)	.016 (.4)
6.00"+ (150+)	.002 (.05)	.020 (.5)



Twin Bore Roughing System

Stepped cutting is utilized when heavy depth of cut is required. The inserts are set at different diameters. The insert cutting the smaller diameter is given axial lead 1.25 times greater than the feed per revolution over the other insert. Use only insert holders with 0° lead. Stepped cutting allows 1.75 x the depth of cut per tables on page 40. Feed rates must be reduced to .5 x appropriate value.

Lead = 1.25 X IPR



RULES OF STEPPED CUTTING

1. Use insert holders with 0° lead.
2. Set height in inner cutting edge to provide lead 1.25 times greater than the feed per revolution.
3. Feed rate as roughing with a single cutter.
4. Remove half of the material to be removed with each insert. This should be sufficient for most applications.

TO BALANCE CUTTING FOCES, USE THE FORMULA BELOW

$$A_2 = .7071 \sqrt{A_3^2 - A_1^2}$$

A₁ – Hole starting diameter

A₂ – Inside cutter set diameter

A₃ – Outside cutter set diameter

ADJUSTING FOR STEPPED CUTTING

RECOMMENDED TIGHTENING TORQUE IN/ LBS.

Rough Head	Insert Holder	PC Screw
PC2-4205	12 (1.3 Nm)	36 (4.1 Nm)
PC3-4305	36 (4.1 Nm)	48 (5.5 Nm)
PC4-4405	48 (5.5 Nm)	72 (8.3 Nm)
PC5-4505	72 (8.3 Nm)	96 (11.1 Nm)
PC6-4605	72 (8.3 Nm)	120 (13.9 Nm)

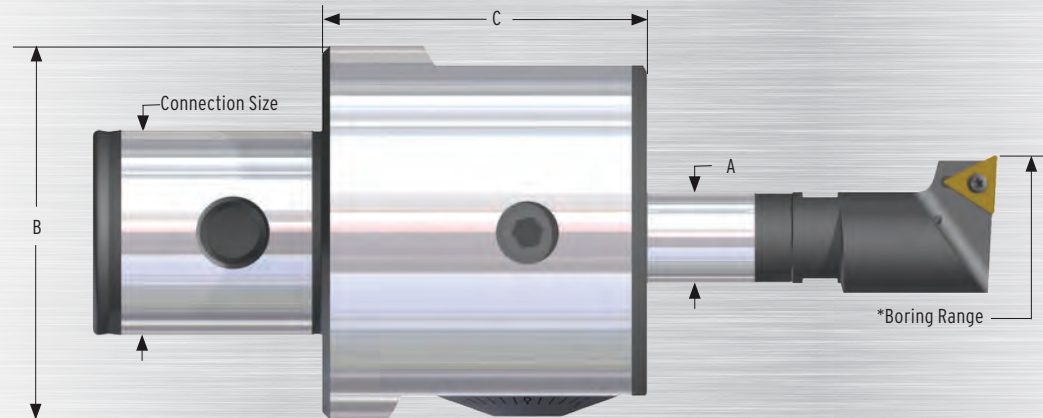
Stepped cutting allows removal of more metal since each insert is set at a different diameter.

1. Make sure the height cam is located with the reference mark in the vertical position as shown.
2. Loosen the insert holder clamps. Re-tighten enough to put drag on the insert holder.
3. Adjust the diameter by turning the adjusting screw. Always adjust in the clockwise direction. Set the diameter of each insert to remove approximately one half the material.
4. Using the cam screw, adjust the inner cutting edge so that it has a lead over the outer cutting edge. This lead should be a minimum of 1 1/2 times the feed per revolution.
5. Tighten the insert holder clamps.

NOTE: When using stepped cutting, the feed rate must be that of a single cutter.

Small Diameter Boring System

224 Small Diameter Balanced Boring Tools



* Calculate maximum boring range by adding adjustment diameter to boring bar minimum diameter.

SMALL DIAMETER BALANCEABLE BORING TOOLS

- Wide work range from .078" to 1.89" (2-48mm) Diameter.
- Precise and repeatable diameter adjustment to .0001" (.002).
- No movement between lock and unlock eliminates setting errors common to other systems.
- High rigidity under all cutting conditions.
- Bored through tool receiver allows the boring tool to be telescoped for optimum rigidity.
- All system components with through hole permits through-spindle coolant.
- Easy to use balancing system permitting vibration free high-speed hole making.
- Available system of completely balanced boring bars and insert holders.
- Tested to over 20,000 RPM.

INCH GRADATION UNITS

Part Number	Bore Range Min	Bore Range Max	Connection Size	Adjustment Diameter	A	B	C	Weight lbs. (kg)
PC6-20SDE62B	0.078" (2 mm)	1.89" (48 mm)	PC6	.315"	5/8"	2.52" (64 mm)	2.24" (57 mm)	3.15 lbs. (1.43 kg)
PC4-2015	0.078" (2 mm)	.790" (20 mm)	PC4	.200"	1/2"	2.00" (50.8 mm)	1.5" (38.1 mm)	1.00 lbs. (0.45 kg)

METRIC GRADATION UNITS

Part Number	Bore Range Min	Bore Range Max	Connection Size	Adjustment Diameter	A	B	C	Weight lbs. (kg)
PC6-20SDM62B	2 mm (.078")	48 (1.89")	PC6	8 mm	5/8"	64 mm (2.52")	57 mm (2.24")	1.43 kg (3.15 lbs.)
PC6-20SDM16B	2 mm (.078")	48 (1.89")	PC6	8mm	16 mm	64 mm (2.52")	57 mm (2.24")	1.43 kg (3.15 lbs.)

REDUCTION BUSHINGS FOR MODULAR BARS

Part Number	Description
62RB-08MM	5/8" to 8 mm
62RB-10MM	5/8" to 10 mm
62RB-12MM	5/8" to 12 mm
62RB-14MM	5/8" to 14 mm
16RB-08MM	16 mm to 8 mm
16RB-10MM	16 mm to 10 mm
16RB-12MM	16 mm to 12 mm
16RB-14MM	16 mm to 14 mm



BORING NOSE WRENCHES

Part Number	Size (mm)
894 14	14
894 12	12
894 10	10
894 8	8
894 6	6

Small Diameter Boring System

MODULAR BORING NOSES & BARS

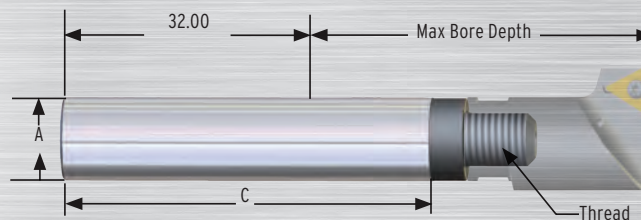
- Modular design allows for reduced inventory.
- Boring bars and noses are coolant-through.
- Boring nose is pre balanced by design to run at high RPM.
- Reduced weight for better performance.



MODULAR BORING BARS

MODULAR BORING NOSES .354" - 1.890" (9 - 48 MM)

Part Number	Min Dia	Recommended Max Dia	Extended Max Dia	Insert Size	Insert Screw	Insert Screw Wrench Sold Separately	Use w/ Bar Size	Wrench Size
BN8X9	.354"(9 mm)	.512"(13 mm)	.669"(17 mm)	TCMT06	028-910	018-002	8 mm	6 mm
BN10X13	.512"(13 mm)	.699"(17 mm)	.827"(21 mm)	TCMT06	028-910	018-002	10 mm	8 mm
BN12X17	.669"(17 mm)	.827"(21 mm)	.984"(25 mm)	TCMT11	812-458	018-007	12 mm	10 mm
BN14X21	.827"(21 mm)	.984"(25 mm)	1.142"(29 mm)	TCMT11	812-458	018-007	14 mm	12 mm
BN16X25	.984"(25 mm)	1.142"(29 mm)	1.299"(33 mm)	TCMT11	028-905	018-007	16 mm or 5/8"	14 mm
BN16X29	1.142"(29 mm)	1.299"(33 mm)	1.457"(37 mm)	TCMT11	028-905	018-007	16 mm or 5/8"	14 mm
BN16X33	1.299"(33 mm)	1.457"(37 mm)	1.614"(41 mm)	TCMT11	028-905	018-007	16 mm or 5/8"	14 mm
BN16X37	1.457"(37 mm)	1.614"(41 mm)	1.772"(45 mm)	TCMT11	028-905	018-007	16 mm or 5/8"	14 mm
BN16X41	1.614"(41 mm)	1.772"(45 mm)	1.890"(48 mm)	TCMT11	028-905	018-007	16 mm or 5/8"	14 mm



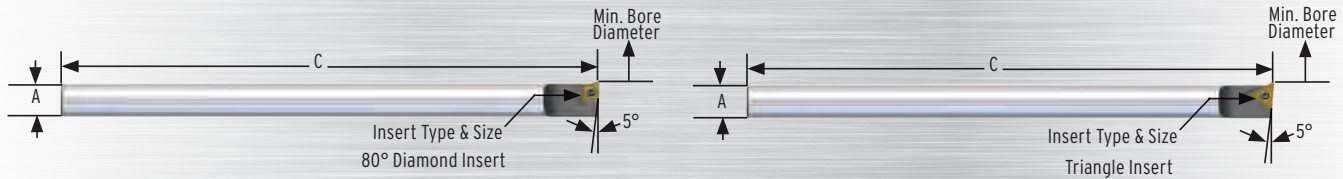
MODULAR BORING BAR BORING RANGE

Part Number	Material	A (Bar Size)	Reduction Bushing Size	C	Min Clamping Length	Max Bore Depth	Thread
BSS8	Steel	8 mm	XXRB-08MM	2.83" (72 mm)	32	1.57" (40 mm)	M5
BSC8	Carbide	8 mm	XXRB-08MM	3.78" (96 mm)	32	2.52" (64 mm)	M5
BSS10	Steel	10 mm	XXRB-10MM	3.78" (96 mm)	32	2.52" (64 mm)	M6
BSC10	Carbide	10 mm	XXRB-10MM	4.41" (112 mm)	32	3.15" (80 mm)	M6
BSS12	Steel	12 mm	XXRB-12MM	3.82" (97 mm)	32	2.56" (65 mm)	M6
BSC12	Carbide	12 mm	XXRB-12MM	5.04" (128 mm)	32	3.78" (96 mm)	M6
BSS14	Steel	14 mm	XXRB-14MM	4.02" (102 mm)	32	2.76" (70 mm)	M6
BSC14	Carbide	14 mm	XXRB-14MM	5.67" (144 mm)	32	4.02" (102 mm)	M6
BSS16	Steel	16 mm	-	4.41" (112 mm)	32	2.78" (70 mm)	M10
BSC16	Carbide	16 mm	-	6.46" (164 mm)	32	4.41" (112 mm)	M10
BSS625	Steel	5/8"	-	4.41" (112 mm)	32	3.15" (80 mm)	M10
BSC625	Carbide	5/8"	-	6.46" (164 mm)	32	5.20" (132 mm)	M10

Small Diameter Boring System

226 Small Diameter Boring Bars & Bushings, .078" (2 mm to 11 mm)

BORING BARS & REDUCTION BUSHINGS



BORING BARS

FROM .187 - .433" (4.7 - 11 MM) DIAMETER

Part Number	Coolant Part Number	Bore Dia. Min.	Bore Dia. Max. *	Reduction Bushing	Max. Bore Depth	A Dia.	C	Bar Material	Insert Type/Size	Insert Screw	Insert Screw Wrench
CB15-18C056	-	.188"	.232"	XXRB-156	1.50"	.156"	6.00"	Carbide	CDCD 05	028-919	018-002
SB18-23C052	-	.232"	.300"	XXRB-187	1.00"	.187"	2.52"	Steele	CDCD 05	028-919	018-002
CB18-23C054	-	.232"	.300"	XXRB-187	2.00"	.187"	4.00"	Carbide	CDCD 05	028-919	018-002
CB25-30C054	-	.300"	.362"	XXRB-250	2.50"	.250"	4.00"	Carbide	CDCD 05	028-919	018-002
CB25-31T054	-	.310"	.372"	XXRB-250	2.50"	.250"	4.00"	Carbide	TDAB 05	028-920	018-007
SB31-36T054	-	.362"	.430"	XXRB-312	1.75"	.312"	4.00"	Steele	TDAB 05	028-920	018-007
CB31-37T056	-	.372"	.440"	XXRB-312	3.25"	.312"	6.00"	Carbide	TDAB 05	028-920	018-007

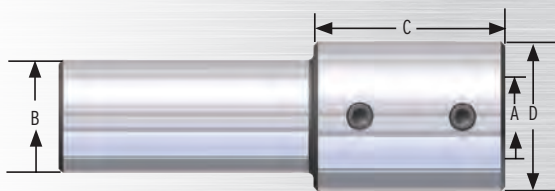
*Recommended for Production. For maximum range, see page 20. Minimum bore diameter above is based on a gage insert with .016" nose radius.



BORING BARS

FROM .078 - .197" (2 - 5 MM) DIAMETER

Part Number	Bore Dia. Min.	Bore Dia. Max.	Boring Bar Holder	Max. Bore Depth	A Dia.	C Length	Grade
CB2-078-393-KW10	.078 (2)	.118 (3)	12RBX-02MM	.393 (10)	.078 (2)	1.97 (50)	Carbide
CB3-118-590-KW10	.118 (3)	.197 (5)	12RBX-03MM	.590 (15)	.118 (3)	1.97 (50)	Carbide



METRIC BORING BAR HOLDER

USE WITH 62RB-12MM OR 16RB-12MM

Part Number	A	B	C	D
12RBX-02MM	2 mm	.472 (12)	.62 (15.7)	.62 (15.7)
12RBX-03MM	3 mm	.472 (12)	.62 (15.7)	.62 (15.7)

REDUCTION BUSHINGS FOR SOLID INCH SHANKS



Part Number	A	B	C	Weight lbs.
50RB-156	.500	.1562	.18	0.05
50RB-187	.500	.1875	.18	0.05
50RB-250	.500	.2500	.18	0.05
50RB-312	.500	.3120	.18	0.05
50RB-250	.500	.2500	.18	0.05
62RB-156	.625	.1562	1.42	.1
62RB-187	.625	.1875	1.42	.1
62RB-250	.625	.2500	1.42	.1
62RB-312	.625	.3120	1.42	.1

Small Diameter Boring System

Boring Tool Kit

227

COMPLETE BORING TOOLING KIT

Boring Range from .354 - 1.890" (9 - 48 mm)

Part Number: BTK-PC6S948B

Metric Kits available, please visit www.parlec.com



Kit Contains:

The Balanceable Modular Boring Kit comes equipped with Parlec's small diameter boring head and a wide range of noses, bars, reduction bushings, and wrenches, all of which are packaged in a sleek and durable carrying case. The kit also includes a complete balancing guide to ensure the highest-level of precision possible.

BORING NOSES

Part Number	Qty	Description
BN8X9	1	Boring Nose
BN10X13	1	Boring Nose
BN12X17	1	Boring Nose
BN14X21	1	Boring Nose
BN16X25	1	Boring Nose
BN16X29	1	Boring Nose
BN16X33	1	Boring Nose
BN16X37	1	Boring Nose
BN16X41	1	Boring Nose

BORING BARS

Part Number	Qty	Description
BSS8	1	Steel 8 mm Boring Bar
BSS10	1	Steel 10 mm Boring Bar
BSS12	1	Steel 12 mm Boring Bar
BSS14	1	Steel 14 mm Boring Bar
BSS625	1	Steel 5/8" Boring Bar

INSERTS

Part Number	Qty	Description
T111615TTP	4	TCMT11
T111620C2G	4	TCMT11
T061615TTP	4	TCMT06
T060820C2G	4	TCMT06

BORING HEAD

Part Number	Qty	Description
PC6-20SDE62B	1	Balanceable Boring head

BORING KIT CASE

Part Number	Qty	Description
902.152	1	Boring Tool Kit Case

REDUCTION BUSHINGS

Part Number	Qty	Description
62RB-08MM	1	5/8" to 8 mm Reduction Bushing
62RB-10MM	1	5/8" to 10 mm Reduction Bushing
62RB-12MM	1	5/8" to 12 mm Reduction Bushing
62RB-14MM	1	5/8" to 14 mm Reduction Bushing

WRENCHES

Part Number	Qty	Description
018-105	1	5 mm Hex T-Handle
018-206	1	6 mm Hex Short Arm
018-002	1	T6 Torx
018-007	1	T7 Torx
894 6	1	Wrench 6 mm
894 8	1	Wrench 8 mm
894 10	1	Wrench 10 mm
894 12	1	Wrench 12 mm
894 14	1	Wrench 14 mm

SHANKS

Part Number	Qty	Description
-	-	ORDER SHANKS SEPARATELY See Pages 212-215

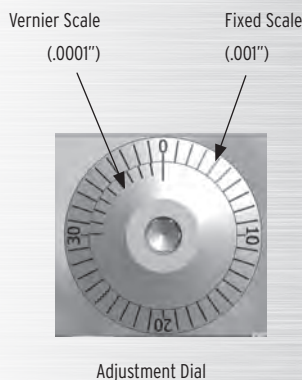
Small Diameter Boring System

> USING THE VERNIER SCALE

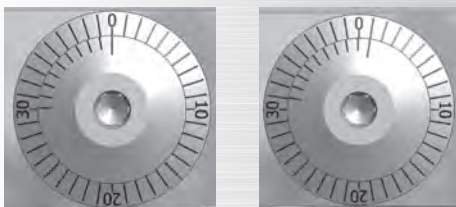
Find the line in the vernier scale that exactly lines up with a reference line.

Diametral increases in .001" are made by adjusting the dial clockwise one full reference line.

Diametral increases in .0001" are made by adjusting the dial clockwise until the appropriate line on the vernier scale lines up with the next fixed scale reference line.



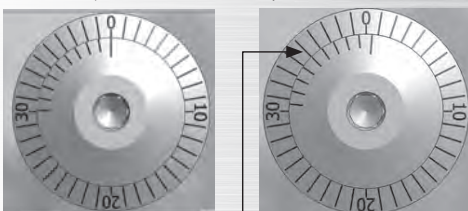
This Example Shows .001" Adjustment



Before adjustment

After adjustment

This Example Shows .0005" Adjustment



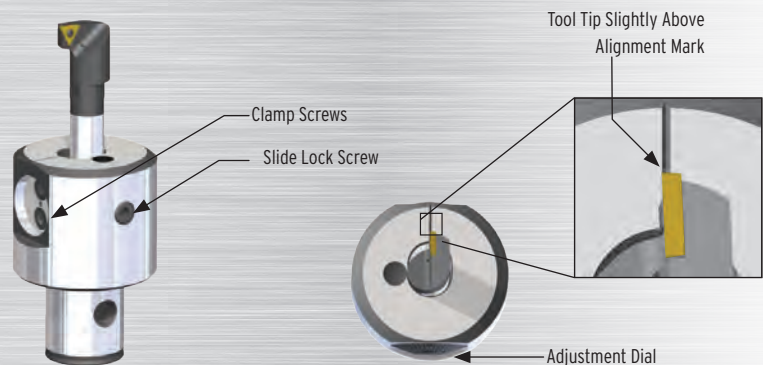
Before adjustment

After adjustment

Metric Vernier also available. See page 233.

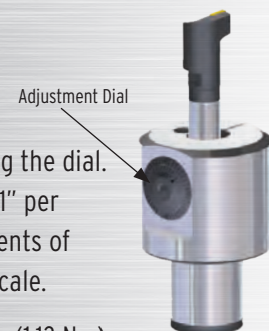
> ASSEMBLY

1. Screw boring nose onto boring bar shank.
2. Loosen the clamp screws.
3. Insert boring bar shank and reduction bushings (if applicable) with the slots 90° to clamp screws. Note: Do not use boring bars with flats.
4. Rotate the boring bar shank to align the insert tip to the alignment mark atop the boring head body. The bar should be slightly above the alignment mark for best timing. Note: Adjusting the position of the insert tip adjusts the "timing" of the bar which optimizes the surface finish and performance.
5. Adjust the boring bar to the minimum desired length.
6. Tighten the clamp screws, Max 20 ft/lbs. (1.13 Nm)



> ADJUSTMENT

1. Loosen the slide lock screw.
2. Adjust tool position by turning and reading the dial. The dial is graduated in increments of .001" per graduation on the diameter. Fine adjustments of .0001" can be made utilizing the vernier scale.
3. Tighten the slide lock screw, Max 10 ft/ lbs. (1.13 Nm)



MAINTENANCE

The Parlec precision boring head is constructed of alloy steel, stainless steel and a precision composite material. The internal components are self lubricating. To insure long service life, light spindle or machine oil may be applied to external moving parts. No further maintenance is required.

TORQUE SPECIFICATIONS

SLIDE LOCK SCREW	10 ft/ lbs. (1.13 Nm)
CLAMP SCREW	20 ft/ lbs. (2.23 Nm)

Small Diameter Boring System

> BALANCE CONFIGURATION CHART

Use outlined configurations to achieve a range of boring diameters.
(See balancing chart)

Balance Configuration - 0

Balance Configuration - 1

Balance Configuration - 2

Balance Configuration - 3

Balance Configuration - 4

Balance Configuration - 5

Balance Configuration - 6

Balance Configuration - 7

Balance Configuration - 8

No Weights

Balance Configuration - 9

©2009 Parlec, Inc. *Patent Pending

> BALANCING CHART

Diameter Range	Preferred Range		Extended Range		Preferred Range		Extended Range			
	Boring Bar Shank / Nose	Balance Configuration	Boring Bar Shank / Nose	Balance Configuration	Boring Bar Shank / Nose	Balance Configuration	Boring Bar Shank / Nose	Balance Configuration		
mm	Steel Bars		Steel Bars		Carbide Bars**		Carbide Bars**			
in	Steel Bars		Steel Bars		Carbide Bars**		Carbide Bars**			
9	BSS8 / BN8X9	0	BSS8 / BN8X9	4	BSC8 / BN8X9	0	BSC8 / BN8X9	5		
9.5		0				5			1	5
10		1				6			2	6
10.5		1				6			3	7
11		2				6			4	8
11.5	2	7	5	9	9					
12	3	8	6	10	10					
12.5	3	9	7	11	11					
13	4	10	8	12	12					
13.5	4	11	9	13	13					
14	5	12	10	14	14					
14.5	5	13	11	15	15					
15	6	14	12	16	16					
15.5	6	15	13	17	17					
16	7	16	14	18	18					
16.5	7	17	15	19	19					
17	8	18	16	20	20					
17.5	8	19	17	21	21					
18	9	20	18	22	22					
18.5	9	21	19	23	23					
19	10	22	20	24	24					
19.5	10	23	21	25	25					
20	11	24	22	26	26					
20.5	11	25	23	27	27					
21	12	26	24	28	28					
21.5	12	27	25	29	29					
22	13	28	26	30	30					
22.5	13	29	27	31	31					
23	14	30	28	32	32					
23.5	14	31	29	33	33					
24	15	32	30	34	34					
24.5	15	33	31	35	35					
25	16	34	32	36	36					
25.5	16	35	33	37	37					
26	17	36	34	38	38					
26.5	17	37	35	39	39					
27	18	38	36	40	40					
27.5	18	39	37	41	41					
28	19	40	38	42	42					
28.5	19	41	39	43	43					
29	20	42	40	44	44					
29.5	20	43	41	45	45					
30	21	44	42	46	46					
30.5	21	45	43	47	47					
31	22	46	44	48	48					
31.5	22	47	45	49	49					
32	23	48	46	50	50					
32.5	23	49	47	51	51					
33	24	50	48	52	52					
33.5	24	51	49	53	53					
34	25	52	50	54	54					
34.5	25	53	51	55	55					
35	26	54	52	56	56					
35.5	26	55	53	57	57					
36	27	56	54	58	58					
36.5	27	57	55	59	59					
37	28	58	56	60	60					
37.5	28	59	57	61	61					
38	29	60	58	62	62					
38.5	29	61	59	63	63					
39	30	62	60	64	64					
39.5	30	63	61	65	65					
40	31	64	62	66	66					
40.5	31	65	63	67	67					
41	32	66	64	68	68					
41.5	32	67	65	69	69					
42	33	68	66	70	70					
42.5	33	69	67	71	71					
43	34	70	68	72	72					
43.5	34	71	69	73	73					
44	35	72	70	74	74					
44.5	35	73	71	75	75					
45	36	74	72	76	76					
45.5	36	75	73	77	77					
46	37	76	74	78	78					
46.5	37	77	75	79	79					
47	38	78	76	80	80					
47.5	38	79	77	81	81					
48	39	80	78	82	82					
48.5	39	81	79	83	83					
49	40	82	80	84	84					

**CARBIDE BORING BARS FOR BEST BALANCE RESULTS, SHORTEN BARS OVERALL LENGTH

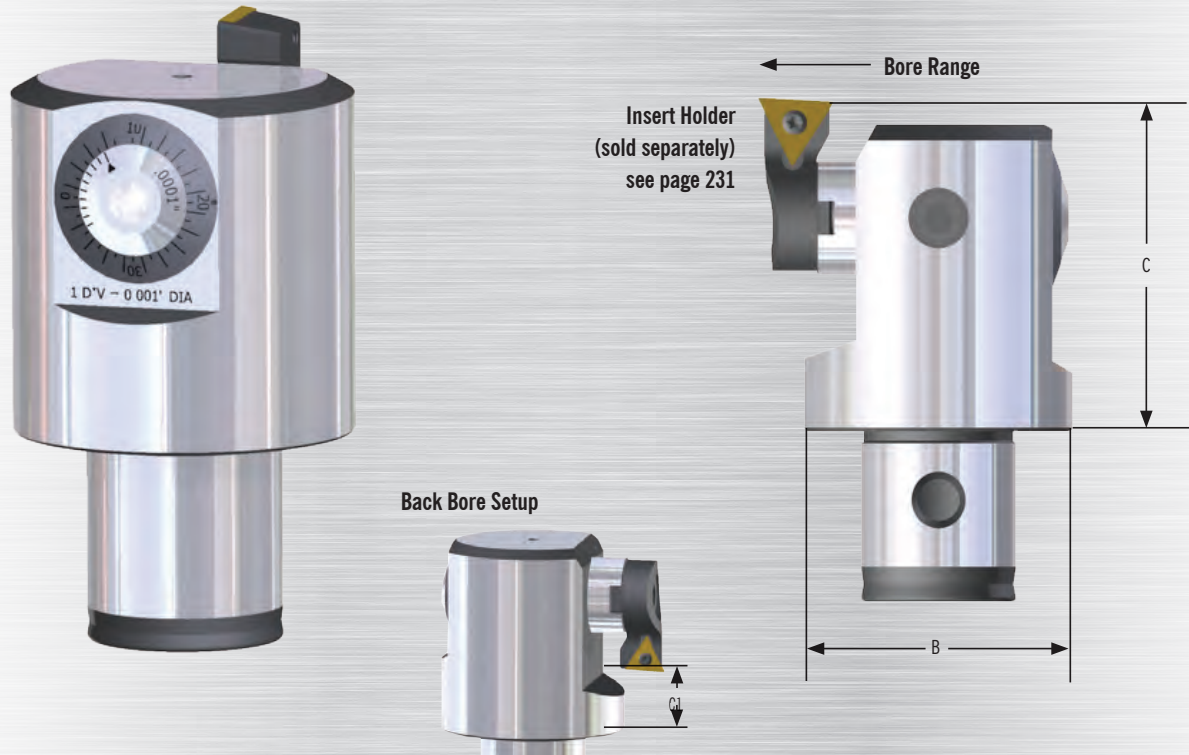
Part Number	OAL" (mm)	Part Number	OAL" (mm)
BSC8	2.60 (66)	BSC14	3.94 (100)
BSC10	3.18 (81)	BSC16	4.68 (119)
BSC12	3.50 (89)	BSC62	4.68 (119)

If requested Parlec will shorten OAL at the time of order.

Precision Finish Boring System

230 Series 3 Precision Inch Finish Heads

INSERT HOLDERS



INCH GRADUATION

PART NUMBERS		APPLICATION RANGE		DIMENSION AND INFORMATION					
Boring Head	Insert Holder Sold Separately	Bore Range Min."	Bore Range Max."	B Dia.	C	C1	Insert Holder Clamp	Insert Type and Size	Weight lbs. (kg)
PC2-3215	321-T06-3 *	0.984	1.300	0.925	1.48	0.61	3215-01	TCMT 06**	0.3 (.14)
	322-T06-3	1.254	1.570						
	323-T06-3	1.534	1.850						
PC3-3315	331-T06-3 *	1.240	1.654	1.201	1.61	0.54	3315-01	TCMT 06**	0.5 (.23)
	332-T06-3	1.586	2.000						
	333-T06-3	1.946	2.360						
PC4-3415	341-T11-3 *	1.614	2.126	1.496	1.85	0.51	3415-01	TCMT 11	0.8 (.36)
	342-T11-3	1.968	2.480						
	343-T11-3	2.398	2.910						
PC5-3515	351-T11-3 *	2.087	2.756	1.929	2.24	0.62	3515-01	TCMT 11	1.6 (.73)
	352-T11-3	2.551	3.220						
	353-T11-3	3.071	3.740						
PC6-3615	361-T11-3 *	2.677	4.000	2.48	2.79	0.90	3615-01	TCMT 11	4.1 (1.86)
	362-T11-3	3.637	4.960						
	363-T11-3	4.577	5.900						
PC6-3715	361-T11-3 *	3.937	6.000	3.74	3.35	1.45	3615-01	TCMT 11	7 (3.2)
	362-T11-3	4.970	7.040						
	363-T11-3	6.157	8.220						

* Recommended for dedicated production jobs. ** Note: Additional clearance required for nose radius above .016"

Precision Finish Boring System

Series 3 Precision Metric Finish Heads, Insert Holders

231

METRIC GRADUATION

PART NUMBERS			APPLICATION RANGE		DIMENSION AND INFORMATION				
Boring Head			Bore Range Min. mm	Bore Range Max. mm	B Dia.	C	Insert Holder Clamp	Insert Type and Size	Weight lbs. (kg)
PC2-3205	321-T06-3	*	25	33	23.5	37.5	3215-01	TCMT 06**	0.3 (.14)
	322-T06-3		32	39.5					
	323-T06-3		39	46.5					
PC3-3305	331-T06-3	*	32	42	30.5	41	3315-01	TCMT 06**	0.5 (.23)
	332-T06-3		41	50.8					
	333-T06-3		50	59.5					
PC4-3405	341-T11-3	*	41	54	38	47	3415-01	TCMT 11	0.8 (.36)
	342-T11-3		50	62.5					
	343-T11-3		61	73.5					
PC5-3505	351-T11-3	*	53	70	49	57	3515-01	TCMT 11	1.6 (.73)
	352-T11-3		65	81.5					
	353-T11-3		78	94.5					
PC6-3605	361-T11-3	*	68	101.5	63	71	3615-01	TCMT 11	4.1 (1.86)
	362-T11-3		93	125.5					
	363-T11-3		117	149.5					
PC6-3705	361-T11-3	*	100	152	95	85	3615-01	TCMT 11	7 (3.2)
	362-T11-3		93	178.5					
	363-T11-3		117	208.5					

Size 1



Size 2



Size 3



Inserts sold separately. See pages 246-249.

INSERT HOLDER

FROM -3 DEGREE LEAD FOR THROUGH BORE AND BORING TO A SHOLDER. 0 DEGREE ALSO AVAILABLE

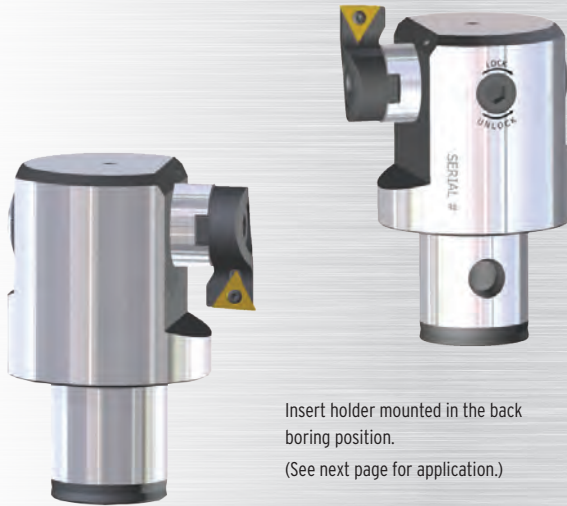
3' Part Number	0' Part Number		Insert Holder Size	Extended Size	Insert Type and Size	Insert Screw	Insert Screw Wrench
321-T06-3	321-T06-0	*	2	1	TCMT 06**	028-910	018-002
322-T06-3				2			
323-T06-3				3			
331-T06-3	331-T06-0	*	3	1	TCMT 06**	028-910	018-002
332-T06-3				2			
333-T06-3				3			
341-T11-3	341-T11-0	*	4	1	TCMT 11	028-905	018-007
342-T11-3				2			
343-T11-3				3			
351-T11-3	351-T11-0	*	5	1	TCMT 11	028-905	018-007
352-T11-3				2			
353-T11-3				3			
361-T11-3	361-T11-0	*	6	1	TCMT 11	028-905	018-007
362-T11-3				2			
363-T11-3				3			

* Recommended for dedicated production jobs. ** Note: Additional clearance required for nose radius above .016"

Precision Finish Boring System

> CONFIGURATION

Insert Holder mounted in the standard boring position.



> ASSEMBLY

Install the Insert Holder to the Spindle using the Insert Holder Screw.



> ADJUSTMENT

1. Loosen the Spindle Lock Screw.
2. Adjust tool by turning and reading the dial. The dial is graduated in increments of .001" or .02 mm per graduation on the diameter. Fine adjustment of .0001" or .002 mm can be made utilizing the Vernier Scale.
3. Tighten the Spindle Lock Screw.

TIGHTENING TORQUES (MAXIMUM)

Head	Insert Holder Clamp	Slide Lock
2	11 in. lbs.(1 Nm)	5 in. lbs. (0.5 Nm)
3	20 in. lbs. (2.2 Nm)	13 in. lbs. (1.5 Nm)
4	25 in. lbs. (2.8 Nm)	22 in. lbs. (2.5 Nm)
5	50 in. lbs. (5.6 Nm)	50 in. lbs. (5.6 Nm)
6	130 in. lbs. (14.7 Nm)	85 in. lbs. (10 Nm)
7	130 in. lbs. (14.7 Nm)	85 in. lbs. (10 Nm)



Precision Finish Boring System

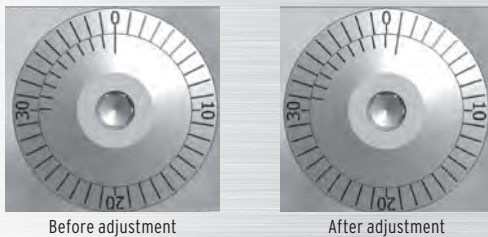
> USING THE INCH VERNIER SCALE

Find the line in the vernier scale that exactly lines up with a reference line.

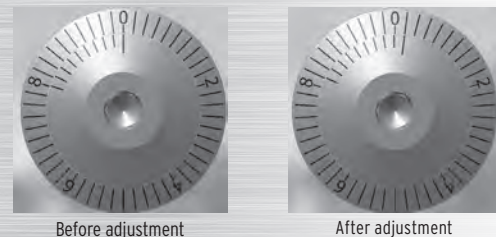
Diametral increases in .001" are made by adjusting the Dial clockwise one full line on the fixed scale.

Diametral increases in .0001" are made by adjusting the Dial clockwise until the appropriate line on the vernier scale lines up with the next fixed scale reference line.

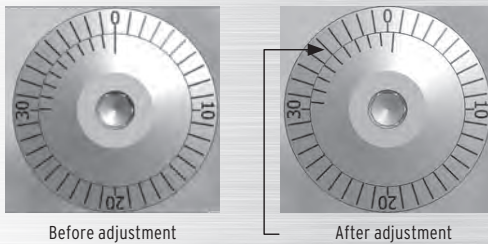
This Example Shows .001" Adjustment



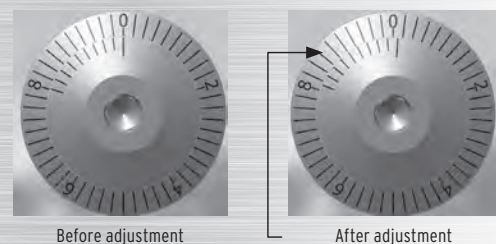
This Example Shows .02 mm Adjustment



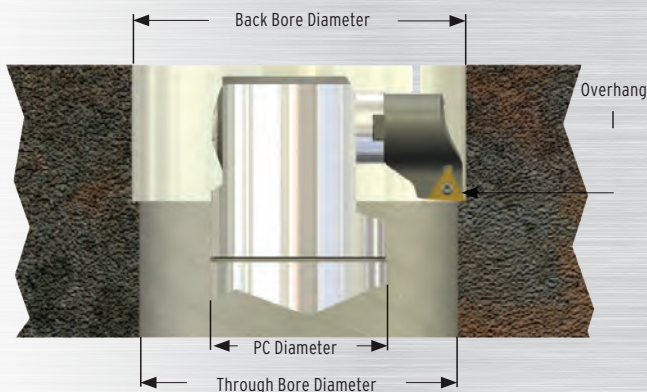
This Example Shows .0005" Adjustment



This Example Shows .01mm Adjustment



> CALCULATING BACK BORE RANGE



- **Back Bore Diameter** is the same as range in the charts page 234 and 235.
- **Minimum Through Bore Diameter** is calculated:
 $(PC\ Diameter/2) + (Back\ Bore\ Diameter/2) +$
minimal clearance (.010)
- **Overhang** of insert from boring bar connection should be measured to make sure there is enough clearance. Calculate $(Back\ Bore\ Diameter - Through\ Bore\ Diameter)/2$

Precision Finish Boring System

EFFECTS OF CUTTING SPEED

CUTTING SPEED EFFECTS

Variable	Low Speed	High Speed
MACHINING TIME	Longer	Shorter
SURFACE FINISH	Coarser	Finer
PROBABILITY OF VIBRATION	Lower	Higher

RECOMMENDED FINISHING SPEED FOR STEEL

Steels	BHN	TR / TT / SN	C1 / C2	AL	AS	TE
CARBON STEEL C = 0.15%	125	550-750	600-800	150-350	650-1000	950-1300
CARBON STEEL C = 0.35%	150	525-800	600-800	150-350	625-950	850-1200
CARBON STEEL C = 0.70%	180-250	425-625	550-750	150-250	500-750	750-950
ALLOY STEEL 4000	125-200	425-625	550-750	150-250	500-750	750-950
ALLOY STEEL 5000	225	250-500	350-525	150-250	300-600	400-650
ALLOY STEEL 8000	300	200-400	300-525	100-200	350-475	400-500
STAINLESS STEEL, ANNEALED 400 SERIES	150-270	400-625	400-600	150-250	475-750	425-650
STAINLESS STEEL, ANNEALED 300 SERIES	150-220	450-550	350-500	150-300	550-650	425-650
CAST STEEL, LOW CARBON	150	325-450	450-650	100-250	400-550	475-600
CAST STEEL, LOW ALLOY	150-250	250-350	250-400	100-250	300-425	400-575
CAST STEEL, HIGH ALLOY	160-250	-	250-400	75-250	-	400-500

All values are in SFM.

OTHER MATERIALS

Material	BHN	TR / TT / SN	C1 / C2	AL	AS	TE
MALLEABLE CAST IRON, FERRITIC	110-150	525-700	300-450	600-1100	700-1000	-
MALLEABLE CAST IRON, PEARLITIC	150-270	250-400	200-250	600-1000	300-750	-
GREY CAST IRON, LOW TENSILE	150-220	525-800	325-525	400-1200	600-1600	-
GREY CAST IRON, HIGH TENSILE	200-330	350-600	225-400	400-900	350-900	-
NODULAR IRON, FERRITIC	125-230	300-500	300-400	400-950	450-900	-
NODULAR IRON, PEARLITIC	200-300	250-400	200-350	400-700	350-700	-
ALUMINUM ALLOYS	30-120	-	600-3000	-	-	-
ALUMINUM ALLOYS, CAST	100-130	-	600-3000	-	-	-
EXTRA HARD STEEL	50-65RC	-	60-120	-	-	-
WASPALLOY, DISCALLOY, INCOLOY	180-250	-	50-200	-	-	150-350
MONEL, INCONEL	125-250	-	45-90	-	-	90-300
TITANIUM	100-200	-	120-250	-	-	325-500
COPPER, BRASS, ZINC	50-150	-	500-1000	-	-	50-1500

All values are in SFM. Feed rates .002 - .008 IPR. For best finish, feed rate should be approximately 25% of insert nose radius. Refer to next page.







330 BHN = Rc: 35
 250 BHN = Rc: 24-25
 220 BHN = Rc: 20

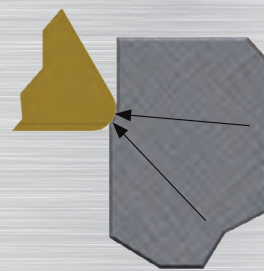
Precision Finish Boring System

EFFECTS OF FINISH FEED RATES

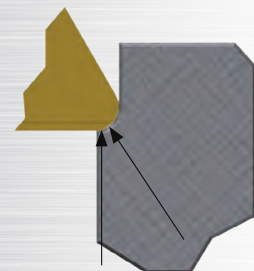
THE BEST SURFACE FINISH IS PRODUCED WHEN THE TOOL IS FED AT APPROXIMATELY 25% OF THE TOOL NOSE RADIUS. THE EFFECT OF CHIP FORMATION OF THE FEED RATE AND DEPTH OF CUT IS ILLUSTRATED BELOW:

FINISH FEED RATE EFFECTS

Feed Rates/Depth of Cut	Result	Chip Form	Solutions
Low	Chips Bird Nest: Difficult to Remove		1. Increase Depth of Cut 2. Increase Feed Rate
Moderately Low	Long Stringy Chips: Difficult to Remove		1. Increase Depth of Cut 2. Increase Feed Rate
Ideal	Chips Coil Like a Spring: Easy to Remove		Keep Running Make Money!
Slightly Heavy	Slight Deformation of Chip		If Finish is Bad, Decrease Speed
Heavy	Deformation of Chip Increased Cutting Forces		If Finish is Bad, Decrease Speed
Very Heavy	Severe Deformation of Chip Increased Cutting Forces Heat Build Up		If Finish is Bad, Decrease Speed Good Chip for Roughing



Small Depth of cut allows cutting forces to push insert out of cut.



Depth of cut is large enough to prevent cutting forces from pushing insert out of cut.

- A .016 nose radius insert fed at .004 IPR produces a finish as shown at the right:

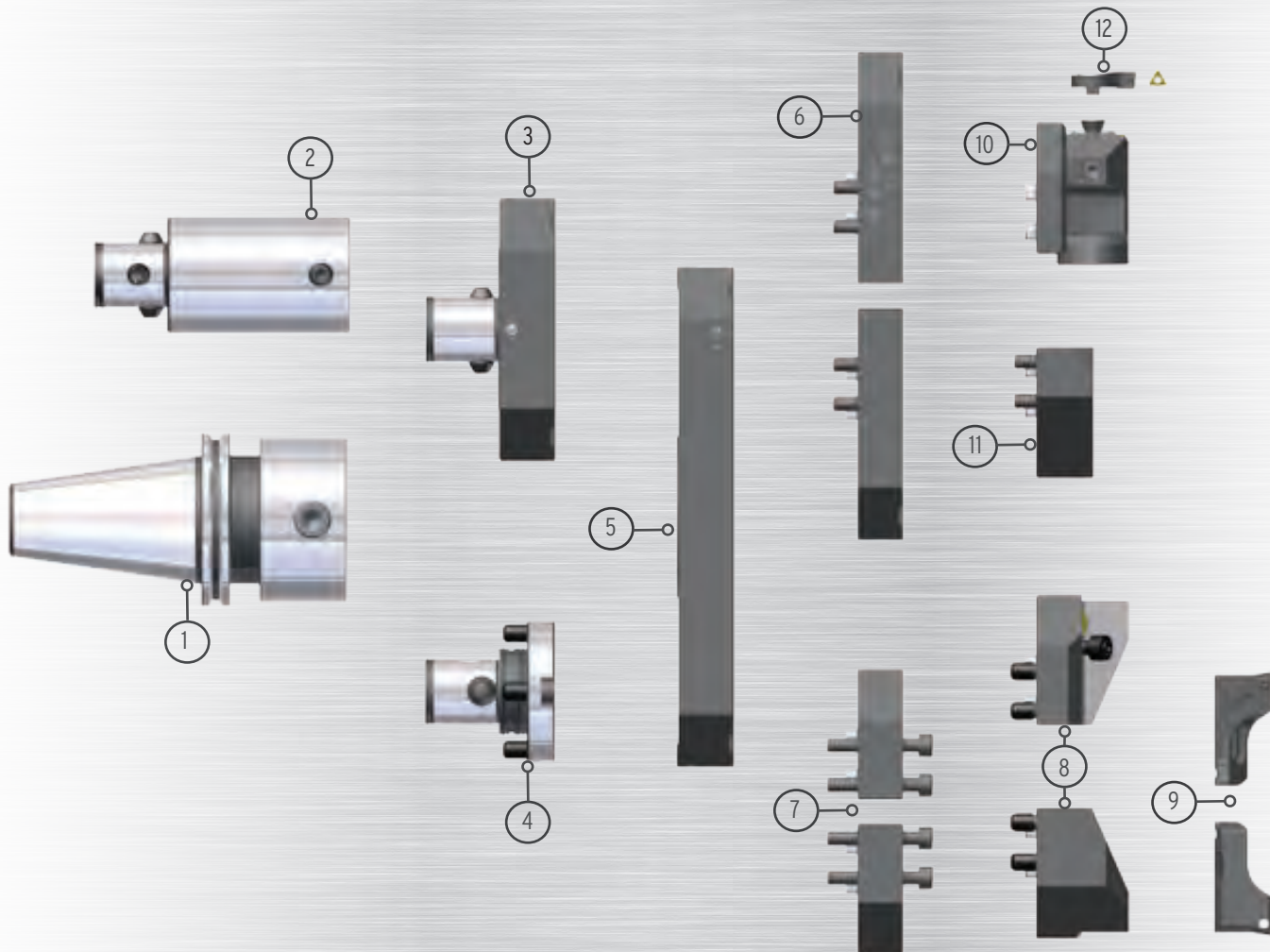
*For best finish, generally feed at 25% of nose radius.

- A .016 nose radius insert fed at .008 IPR produces a finish as shown at the right:

- A .016 nose radius insert fed at .016 IPR produces a finish as shown at the right:

Large Diameter Boring System

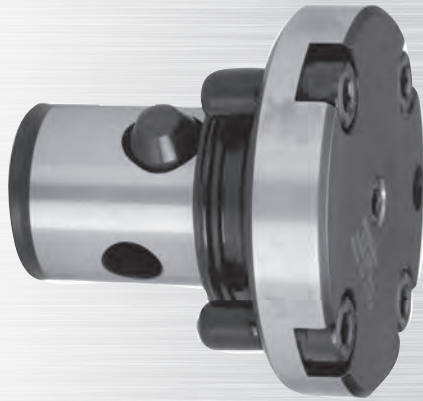
236 Large Diameter Tree



5.95" - 26.35" (152-672 MM) LARGE DIAMETER TREE

Component	Selection Criteria	Catalog page	
1	Modular Shank	Machine tool taper and projection requirement	Page 212-215
2	PC Extensions	Extended reach requirements	Page 216
3	PC6 Extension Base	One piece design for 5.95"-8.50" (151.2 - 216 mm)	Page 238
4	Extension Base Coupler	Modular connection between shank and extension base	Page 237
5	Extension Base	Bore range 8.50" (216 mm) and up	Page 238
6	Extension Slide	Extends range of base to eliminate next size	Page 239
7	Riser	Extends reach when used for OD boss	Page 239
8	Insert Holder Base	Mounts rough insert holders to base	Page 240
9	Twin Bore Insert Holders	Mounts and adjusts insert to diameter	Page 240
10	Finish Boring Unit	For precision adjustment of finish bore diameter	Page 241
11	Counter Weight	Offset the mass of Finish Boring Unit for high rpm	Page 241
12	Finish Insert Holder	Mounts finish Insert to Finish Boring Unit	Page 241

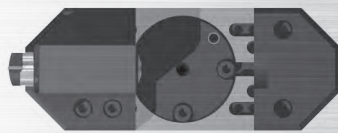
EXTENSION BASE COUPLER



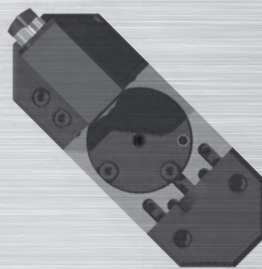
- Available in PC6 and PC7 connections
- Modular Extension Base Couplers connects the Extension Slide directly to the face of the PC connection eliminating an additional connection and loss of rigidity
- Coolant through for direct supply of coolant to cutting edge
- 0, 45 or 90 Degree orientation setting allows for tool extension timing for carousel clearance with out the need for special shanks

EXTENSION BASE COUPLER

Connection Size	Part Number	Mass lbs. (kg)
PC6	PC6-EBC	2.3 (1.1)
PC7	PC7-EBC	2.75 (1.3)



0 Degree orientation



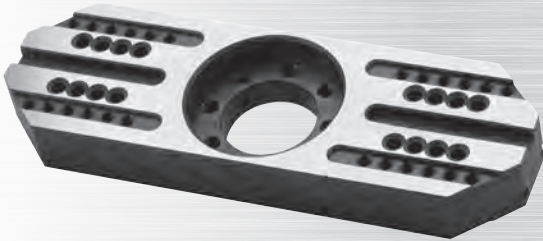
45 Degree orientation



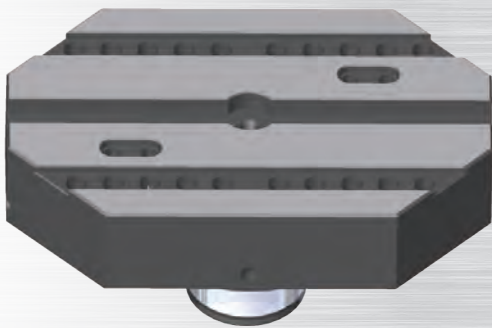
90 Degree orientation

Large Diameter Boring System

EXTENSION BASES



- Extension bases have 3 or 4 positions to maximize bore range
- Coolant supply to Insert Holder pair or Finish Boring Unit to supply coolant directly to the cutting edge
- Used with Extension Base Couplers allows timing of cutting tip eliminating tool interference in carousel



INTEGRAL PC CONNECTION FOR BORING RANGE

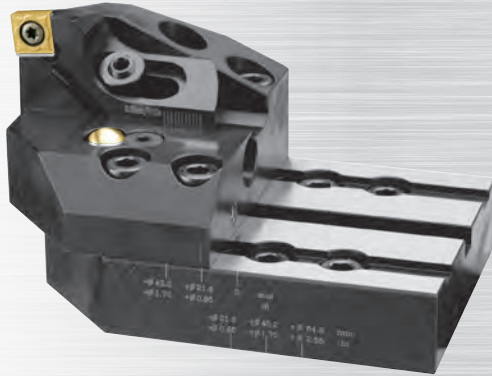
	Min.	Max.	Extension Base	Mass lbs.	kg
Inch	5.95	8.50	PC6-910-850	6	2.72
Metric	151.2	216			

BORING RANGE

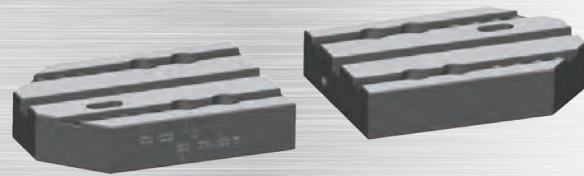
	Min.	Max.	Extension Base	Mass lbs.	kg
Inch	8.50	11.05	910-1150	6.6	3
Metric	216	281			
Inch	11.05	13.60	910-1360	9.4	4.3
Metric	280	346			
Inch	13.60	16.15	910-1615	12.4	5.6
Metric	346	410			
Inch	16.15	18.70	910-1870	15.4	7
Metric	410	475			
Inch	18.70	21.25	910-2125	18.4	8.4
Metric	475	540			
Inch	21.25	23.80	910-2380	21.3	9.7
Metric	539	605			
Inch	23.80	26.35	910-2635	24.2	11
Metric	605	672			

Large Diameter Boring System

EXTENSION SLIDE



- Extends the range of extension base 2.55" or 65 mm
- Eliminates the requirement of next slide diameter for low volume or non-production applications



BORING RANGE

	Bore Range	Range Extension Slide (pair)	Mass lbs.	kg
Inch	+2.55	910-RES	7.9	3.6
Metric	+65			

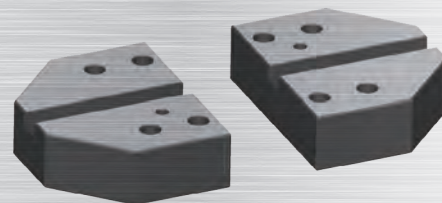
Adds 1" (25.4) to projection length.

MOUNTING CAP SCREWS (8 INCL.)

SHCSM8X30 (each)

RISER

- Extends the reach of insert for OD boring



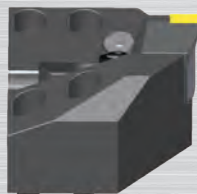
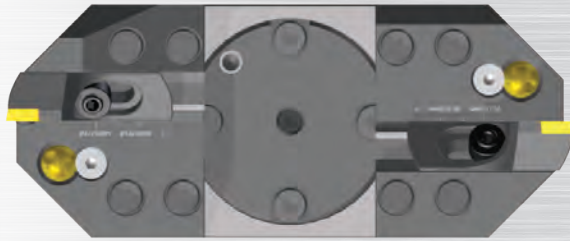
	Bore Reach	Z Length Riser (pair)	Mass lbs.	kg
Inch	+1.00	910-ZRIS	4.4	2
Metric	+25.4			

MOUNTING CAP SCREWS (8 INCL.)

SHCSM8X50 (each)

Large Diameter Boring System

240 Rough Boring Holder Base



HOLDER BASE

	Bore Range	Holder Base (pair)	Mass lbs.	kg
Inch	2.55	910-HBP	4.7	2.1
Metric	65			

SPARE COMPONENTS

Mounting Cap Screw *	Insert Holder Clamps	Diameter Adjust Screw	Height Adjusting Cam
SHCSM8X20 (each)	4605-12 (pair)	910-HBP-2 (2)	4605-13 (pair)

* 8 (Incl.)

INSERT HOLDERS

Part Number	Size	Insert Type and Size	Lead angle	Insert screw	Insert Screw Wrench	Mass lbs.	kg
4605-61S12	61	SCMT 12	6 degrees	028-907	018-009	0.6	.3
4605-61C12	61	CCMT12	0 degrees	028-907	018-009	0.6	.3
4605-61W08	61	WCMX08	10 degrees	028-906	018-008	0.6	.3

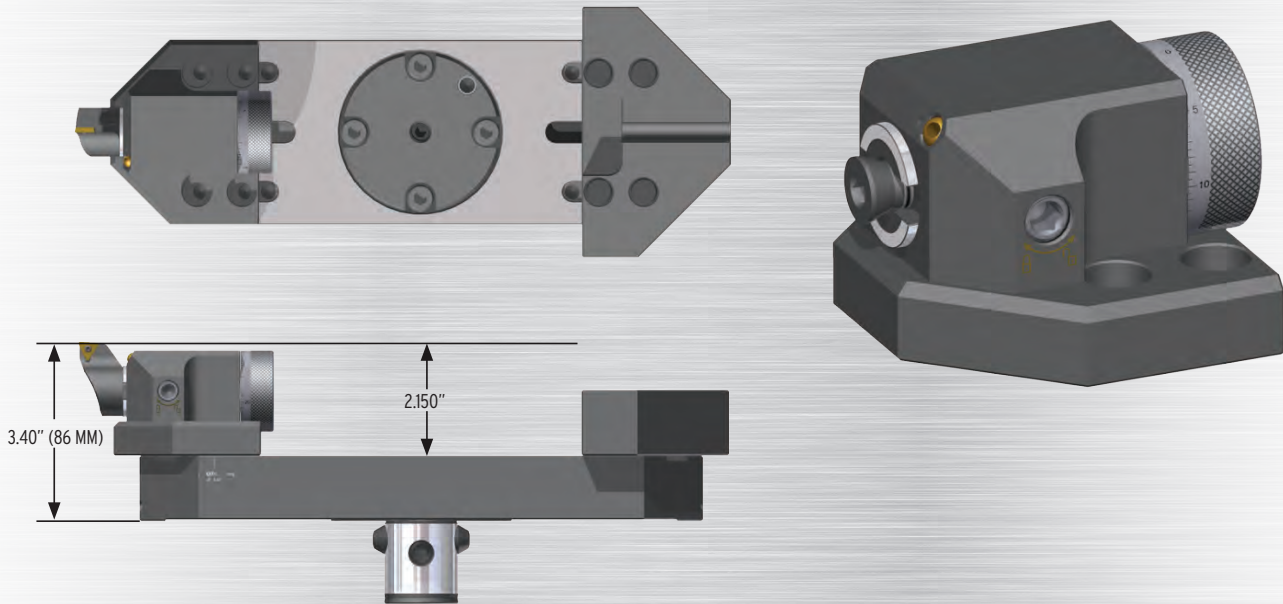
Other styles and a complete listing of Twin Bore Insert Holders on page 219. For speeds, feeds and material removal recommendations and Boring Bar set up see pages 220-223.

ROUGH BORING HOLDER BASE

- 3 positions allows a single insert holder to bore the complete range
- Coolant directed onto the cutting edge for maximum cooling, chip forming and tool life
- Independent height and diameter setting permits balanced cutting for almost perfectly round holes from the beginning, irrespective of core shifts.
- Two height balanceable cutting edges results in metal removal at rates almost 4 times that of a single cutter.
- Height adjustments are made with a cam that supports the insert holder where needed, at the furthest radial point.
- Each insert holder can be adjusted individually in diameter with a dial screw for fast, easy set-up operations.
- Balanced or stepped cutting can be done with the same set of insert holders permitting heavy stock removal and eliminating the need to purchase two sets of insert holders.
- Standard through-spindle coolant capability cools the insert and flushes chips.
- ISO standard inserts - requires no special expensive inserts.
- Square SCMT insert holders with 6° lead for through hole boring or extreme core shifts.
- Diamond CCMT insert holders for boring to a square holder, or deep bore lengths.
- Trigon WCMT insert holders for applications requiring heavy stock removal.



Large Diameter Boring System



BORING RANGE

	Bore Range	Finish Boring Unit	Mass lbs.	kg
Inch	2.55	910-FBU	3.2	1.44
Metric	65	910-FBUM		



Inserts Information
Insert holder

INSERT HOLDERS

Part Number	Size	Insert Type and Size	Lead angle	Insert screw	Insert Screw Wrench
361-T11-3	6	TCMT 11	-3 degrees	028-905	018-007

Complete listing of Finish Insert Holders on page 249.

COUNTER WEIGHT

Part Number	Mass lbs.	kg
910-FCW	3.2	1.44

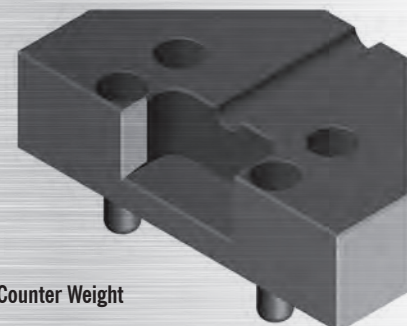
SPARE PARTS

Insert Holder Clamp Screw	Mounting Screws (4 Incl.)
3615-01	SHCSM8X20 (each)

For speeds, feeds and material recommendations, refer to pages 238-239.

FINISH BORING UNIT

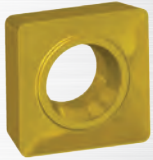
- .0005" (.02) adjustment graduation
- Coolant directed onto the cutting edge for maximum cooling, chip forming and tool life
- No movement between lock and unlock eliminates setting errors common to other systems
- Large easy to adjust dial



Counter Weight

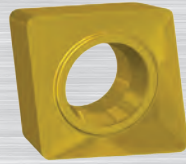
Insert Selection Guide

SHAPE



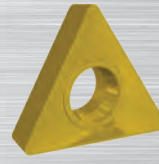
SQUARE

- For rough boring through holes and castings to avoid exit hole breakout.
- Four usable edges for maximum insert life.



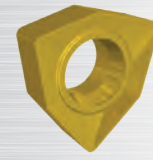
80° DIAMOND

- For rough boring to a shoulder or deep bore depths where maximum rigidity of the bar is required.
- For finishing small diameters where maximum edge strength is required.



TRIANGLE

- For finishing with three corners for maximum insert life.



TRIGON

- For rough boring when large depth of cut is required or when extreme core shift is experienced.

CARBIDE GRADE:

Select the proper insert grade from pages 258-259. Material type, machine capabilities and type of hole, i.e., Interrupted Cut, can affect the grade of carbide used.

Coated

- Longer service life at higher speeds.

Uncoated

- Less expensive and effective in materials for which coatings do not add any benefit.

Cermet

- Yields the highest speed and durability for selected materials.

RADIUS:

Finish, bar rigidity, insert life, and engineering features of the work piece all contribute to choosing the proper insert radius.

Larger

- Better surface finish and longer insert life.

Smaller

- Less cutting pressures, in extreme conditions, reduced bar flex and chatter.

PERIPHERY:

Pressed

- Utility grade for general purpose. Longer tool life.

Ground

- Better for finishing where tight bore tolerances are required.

Insert Selection Guide

Warning

The use of carbide in cutting is generally a safe and reasonable practice. When used properly, these products are designed to be safe and without risk to health and property. Please review the recommended use and pay particular attention to insure the tooling is used within its designed speed ranged and operating forces. Misuse may represent a hazard to people and property.

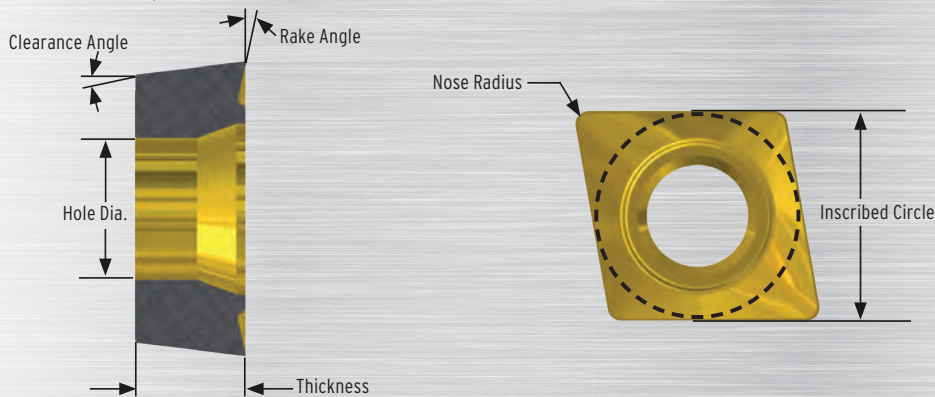
These products use materials which are classified as hazardous by OSHA. This may include one or more of the following carbide, titanium carbide, chromium carbide, chromium cadmium, cobalt, and nickel.

Carbide is a material which is brittle in nature. It will fracture from shock or impact which may cause pieces to detach at high velocities. Carbides should not be hammered or fitted with undo force. Suitable eye protection should be worn during all processes.

Carbide grinding may release dangerous levels of cobalt. Conventional precautions related to the operations of safe grinding should always be observed.

Additional information and material safety data sheets are available on request.

Diagram description



PART NUMBER EXPLANATION

EXAMPLE: T111615TTP

(T)	Size (11)	Radius (16)	Rake Angle (15)	Grade (TT)	Periphery (P)
T=TRIANGULAR	05,06,09,11	08=.008	00=0°	See Carbide	-
S=SQUARE	09,12	12=.016	06=6°	Grade	P=Pressed
C=80° DIAMOND	05,06,09,12	16= .016	15=15°	Section	G=Ground
W=TRIGON	03,04,05,08	31=.031	20=20°	Pages	-
-	-	47=.047	23=23°	114-115	-

Insert Selection Guide

244 Insert Carbide Grades

		ISO ANSI			
P STEELS, CAST STEELS, STAINLESS STEELS, AND LONG CHIPPING CAST IRON.	01	C8		CT	
	10			AL	C7
	20	C7		CR	
	30	C6	SN		CM
	40			TT	
	50	C5			
M STEEL, CAST STEEL, MANGANESE STEELS AND HEAT RESISTANT ALLOYS.	10			TE	CT C7
	20			C2	
	30		TT	VN	
	40				
K CAST IRON, ALUMINUM, NON-FERROUS METALS.	01	C4		TE	AL CT
	10	C3	AS		
	20	C2		C2	C1
	30	C1			

Uncoated Grades

- C1** ■ Is a strong micro grain carbide which resists chipping, breaking, and edge build-up. Great for roughing at high feed rates on interrupted cuts. Use for titanium, high temperature alloys, inconel, and hastalloy.
- C2** ■ Is a relatively fine grain grade on a WC-CO base. It has very good toughness and good rake angle resistance to abrasive wear. Applications include stainless steels, cast irons, non-ferrous metals, and most high temperature alloys.
- C7** ■ Finish and light roughing non-coated grade for steel and steel castings. Performs best in favorable conditions. High speeds and moderate feeds.

Titanium coated Grades

- TT** ■ Is a very tough grade with a triple coating of Tin, TiC, and TiN. It is a good grade for roughing and finishing in less than ideal conditions. Used in machining steels and stainless steels at low speeds.
- TE** ■ Is a carbide grade with a PVD coating. It is used for machining aerospace materials, high temperature alloys, and stainless steels.
- TR** ■ Is a PVD coated micro grain carbide. Performs well in alloy steels, nickel-based materials, and heat-treated materials up to Rc: 40.
- SN** ■ Delivers outstanding performance in moderate-roughing to semi-finishing operations, especially in interrupted cuts. An advanced multi-layer coating (TiCN/Al₂O₃/TiN), applied over a cobalt enriched substrate, gives SN a near optimum balance of toughness, surface lubricity, and resistance to metal build-up to yield excellent wear resistance throughout its application range.
- VN** ■ Is a micro-grained grade with an excellent balance of toughness and wear resistance. Coated with PVD TiN for improved lubricity and wear resistance with up-sharp cutting edges, VN excels in light roughing to high-speed finishing of high-temperature alloys, stainless steels, cast iron, aluminum, and non-ferrous materials.

Cermet Grades

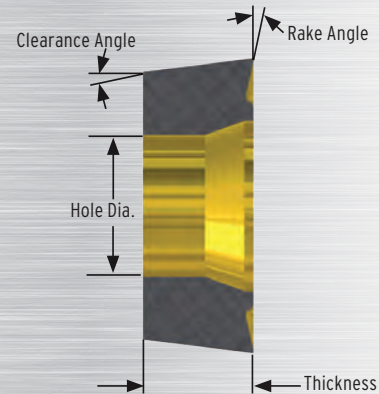
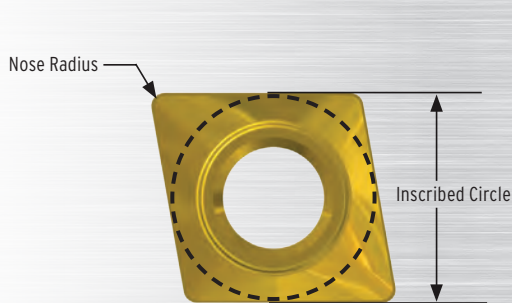
- CT** ■ Is a cermet grade of TiC and TiN particles in a nickel cobalt binder, for finishing steels at high cutting speeds.
- CM** ■ Is a cermet grade. It is slightly less hard than CT and can be used in less favorable conditions.
- CR** ■ Is a titanium nitride cermet which combines toughness and edge wear. Use on steels up to Rc: 35.
- CC** ■ A titanium coated cermet for better wear resistance.

Aluminum oxide coated Grades

- AL** ■ Is an Al₂O₃ coated insert. Its application is machining cast iron and steels at moderately high speeds.

Inserts

246 Diamond Inserts



DIAMOND INSERTS

SIZE CDCD 05

Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
C050700C2G	.156	15°	.007	.040	0°	.084	C2	Uncoated	Ground
C051600C2G	.156	15°	.016	.040	0°	.084	C2	Uncoated	Ground
C050700TRG	.156	15°	.007	.040	0°	.084	TR	Coated	Ground
C051600TRG	.156	15°	.016	.040	0°	.084	TR	Coated	Ground
C050700PCD	.156	15°	.007	.040	0°	.084	PCD	Diamond	Ground
C051600PCD	.156	15°	.016	.040	0°	.084	PCD	Diamond	Ground

SIZE CCMT 06

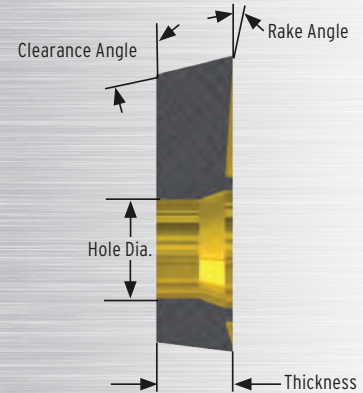
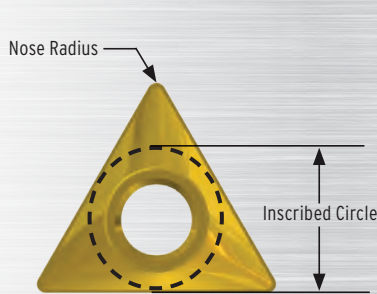
Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
C061615C2P	.250	7°	.016	.094	15°	.110	C2	Uncoated	Pressed
C063115C2P	.250	7°	.031	.094	15°	.110	C2	Uncoated	Pressed
C061620C2G	.250	7°	.016	.094	20°	.110	C2	Uncoated	Ground
C061615TTP	.250	7°	.016	.094	15°	.110	TT	Coated	Pressed
C063115TTP	.250	7°	.031	.094	15°	.110	TT	Coated	Pressed

SIZE CCMT 09

Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
C091615C2P	.375	7°	.016	.156	15°	.173	C2	Uncoated	Pressed
C093115C2P	.375	7°	.031	.156	15°	.173	C2	Uncoated	Pressed
C091620C2G	.375	7°	.016	.156	20°	.173	C2	Uncoated	Ground
C091615TTP	.375	7°	.016	.156	15°	.173	TT	Coated	Pressed
C093115TTP	.375	7°	.031	.156	15°	.173	TT	Coated	Pressed

SIZE CCMT 12

Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
C121615C2P	.500	7°	.016	.188	15°	.216	C2	Uncoated	Pressed
C123115C2P	.500	7°	.031	.188	15°	.216	C2	Uncoated	Pressed
C124715C2P	.500	7°	.047	.188	15°	.216	C2	Uncoated	Pressed
C121620C2G	.500	7°	.016	.188	20°	.216	C2	Uncoated	Ground
C123120C2G	.500	7°	.031	.188	20°	.216	C2	Uncoated	Ground
C121615TTP	.500	7°	.016	.188	15°	.216	TT	Coated	Pressed
C123115TTP	.500	7°	.031	.188	15°	.216	TT	Coated	Pressed
C124715TTP	.500	7°	.047	.188	15°	.216	TT	Coated	Pressed



TRIANGULAR INSERTS

SIZE TDAB 05

Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
T050700C2G	.160	15°	.007	.047	0°	.094	C2	Uncoated	Ground
T051600C2G	.160	15°	.016	.047	0°	.094	C2	Uncoated	Ground
T050700TRG	.160	15°	.007	.047	0°	.094	TR	Coated	Ground
T051600TRG	.160	15°	.016	.047	0°	.094	TR	Coated	Ground
T050700PCD	.160	15°	.007	.047	0°	.094	PCD	Diamond	Ground

SIZE TCMT 06

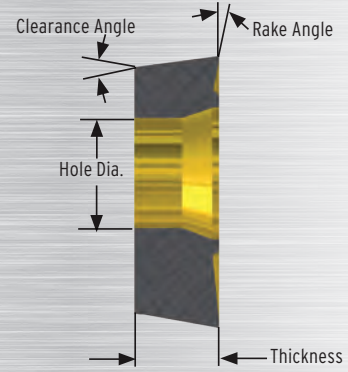
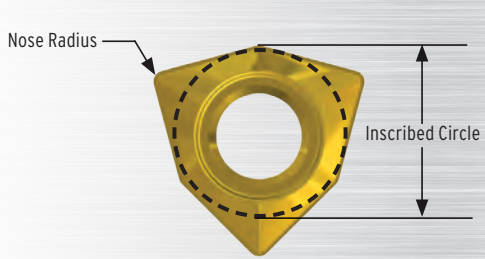
Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
T061206C7G	.156	7°	.008	.078	6°	.087	C7	Uncoated	Ground
T060820C2G	.156	7°	.008	.078	20°	.087	C2	Uncoated	Ground
T060815C2P	.156	7°	.008	.078	15°	.087	C2	Uncoated	Pressed
T061615C2P	.156	7°	.016	.078	15°	.087	C2	Uncoated	Pressed
T060815TTP	.156	7°	.008	.078	15°	.087	TT	Coated	Pressed
T061615TTP	.156	7°	.016	.078	15°	.087	TT	Coated	Pressed
T060820CTG	.156	7°	.008	.078	20°	.087	CT	Cermet	Ground
T061620CTG	.156	7°	.016	.078	20°	.087	CT	Cermet	Ground
T060815CTP	.156	7°	.008	.078	15°	.087	CT	Cermet	Pressed
T061615CTP	.156	7°	.016	.078	15°	.087	CT	Cermet	Pressed
T061600PCD	.156	7°	.016	.078	0°	.087	PCD	Diamond	Ground

SIZE TCMT 11

Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
T111615C7P	.250	7°	.016	.094	15°	.108	C7	Uncoated	Pressed
T111600C2P	.250	7°	.016	.094	0°	.108	C2	Uncoated	Pressed
T111615C2P	.250	7°	.016	.094	15°	.108	C2	Uncoated	Pressed
T113115C2P	.250	7°	.031	.094	15°	.108	C2	Uncoated	Pressed
T111620C2G	.250	7°	.016	.094	20°	.108	C2	Uncoated	Ground
T111600C2G	.250	7°	.016	.094	0°	.108	C2	Uncoated	Ground
T113120C2G	.250	7°	.031	.094	20°	.108	C2	Uncoated	Ground
T110815TTP	.250	7°	.008	.094	15°	.108	TT	Coated	Pressed
T111615TTP	.250	7°	.016	.094	15°	.108	TT	Coated	Pressed
T113115TTP	.250	7°	.031	.094	15°	.108	TT	Coated	Pressed
T110823TEG	.250	7°	.008	.094	15°	.108	TE	Coated	Ground
T111623TEG	.250	7°	.016	.094	23°	.108	TE	Coated	Ground
T111615CTP	.250	7°	.016	.094	15°	.108	CT	Cermet	Pressed
T111615CMP	.250	7°	.016	.094	15°	.108	CM	Cermet	Pressed
T111600ASP	.250	7°	.016	.094	0°	.108	AS	Coated	Pressed
T111600PCD	.250	7°	.016	.094	0°	.108	PCD	Diamond	Ground
T111615SNG	.250	7°	.016	.094	15°	.108	SN	Coated	Ground
T113115SNG	.250	7°	.031	.094	15°	.108	SN	Coated	Ground
T111615VNG	.250	7°	.016	.094	15°	.108	VN	Coated	Ground

Inserts

248 Trigon Inserts



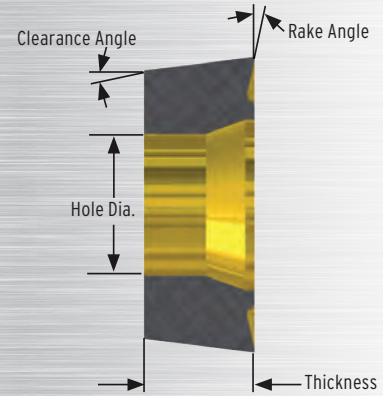
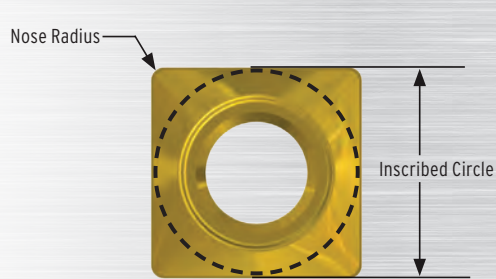
TRIGON INSERTS

SIZE SCMT 09

Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
S091615C2P	.375	7°	.016	.156	15°	.173	C2	Uncoated	Pressed
S093115C2P	.375	7°	.031	.156	15°	.173	C2	Uncoated	Pressed
S091615TTP	.375	7°	.016	.156	15°	.173	TT	Coated	Pressed
S093115TTP	.375	7°	.031	.156	15°	.173	TT	Coated	Pressed

SIZE SCMT 12

Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
S123115C2P	.500	7°	.031	.188	15°	.216	C2	Uncoated	Pressed
S121615TTP	.500	7°	.016	.188	15°	.216	TT	Coated	Pressed
S123115TTP	.500	7°	.031	.188	15°	.216	TT	Coated	Pressed
S124715TTP	.500	7°	.047	.188	15°	.216	TT	Coated	Pressed



SQUARE INSERTS

SIZE WCMX 03

Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
W033115TTP	.218	7°	.031	.093	15°	.110	TT	Coated	Pressed

SIZE WCMX 04

Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
W043115TTP	.250	7°	.031	.093	15°	.122	TT	Coated	Pressed

SIZE WCMX 05

Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
W053115TTP	.312	7°	.031	.125	15°	.126	TT	Cermet	Pressed

SIZE WCMX 08

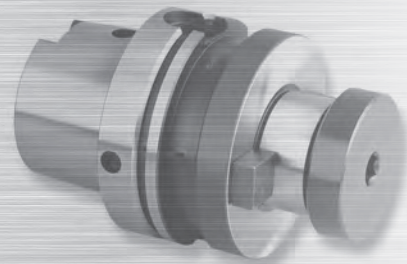
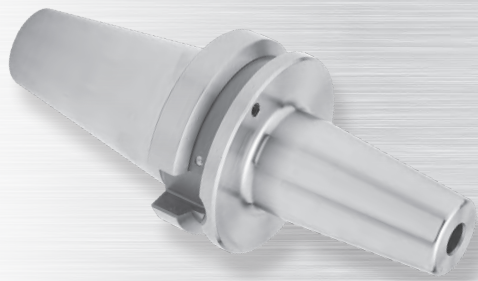
Part Number	IC	Clearance Angle	R	T	Rake Angle	HD	Grade	Type	Periphery
W084715TTP	.500	7°	.047	.187	15°	.169	TT	Coated	Pressed

Product Warranty

Parlec Inc. warrants all tools and tooling systems to be free of defects in manufacturing and materials for a period of one year from the date of shipment. In the case of engineered or special products, the warranty will be interpreted to include such engineering or design recommendations, provided all information pertinent to these factors is submitted to Parlec. Product malfunction due to these factors will be rectified immediately at no charge to the customer. This applies to the product supplied only and does not include any other considerations.

All other warranties, expressed or implied, are excluded from all sales by Parlec.

Parlec Inc. has no control over the use of our products by our customers. All recommendations in this catalog or other information is given in good faith. It is the responsibility of the party using the product to do individual testing to insure the products suitability for any application.



General Safety warnings:

The use of cutting tools, if proper protection is observed, is generally safe. However, fragments of a cutting tool, cutting material, or holding device may be thrown at a very high speed. These fragments can cause severe bodily harm. It is of utmost importance that the proper precautions, including personal protective apparel, machine guarding, and other general safety practices, be taken.

Parlec products are engineered with safety in mind. The materials used and the heat treat specifications meet all standards where applicable. If caution, commonsense, and proper safety practices and protections are used, Parlec products perform without undue safety problems. However, improper use, use of incorrect product, or applying extreme stresses to the product may result in property damage or personal injury.

Retention knob warnings:

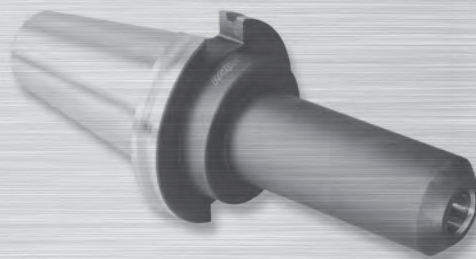
Machine tool manufacturers have used many various styles and sizes of retention knobs. They often look very similar and appear to be interchangeable. The use of the incorrect knob, or the incorrect use of a

knob, may result in injury or property damage. We at Parlec try to insure we specify the correct knob, but due to the variety, it is the responsibility of the end user to check that the supplied knobs are correct for the machine tool and taper type.

It is very important not to intermix metric retention knobs with inch toolholders. The retention knob will screw in and appear to seat correctly. This is not the case, and damage may occur if used.

Be sure to fully tighten the retention knob. Failure to do so may result in the toolholder coming loose during operation. Over tightening may result in swelling of the taper nose. The use of serviceable thread lock is recommended.

Parlec retention knobs are manufactured using alloy steel. They are case hardened to insure long service life and the core is tempered for tough shock resistance. Material heat treat and dimensions are to ANSI specifications.



Additional information and material safety data sheets are available.

Manufacturing Specifications

Material and heat treat:

All tapered products are manufactured from 8620 alloy steel. 8620 steel is the ANSI standard for retention knobs because of its good core strength and its long wear life.

Tapered shanks are case hardened to Rc: 56-60 or Rc: 52-56 and have a core of Rc: 35-40. The case hardness is designed to give maximum wear life without compromising the Rc: 60-62 spindle. Retention knobs are case hardened to Rc: 56-60 with a core of Rc: 35-40.

All tapered products are manufactured from 8620 alloy steel. 8620 steel is the ANSI standard for retention knobs because of its good core strength and its long wear life.

Tapered shanks are case hardened to Rc: 56-60 or Rc: 52-56 and have a core of Rc: 35-40. The case hardness is designed to give maximum wear life without compromising the Rc: 60-62 spindle. Retention knobs are case hardened to Rc: 56-60 with a core of Rc: 35-40.

HSK products are made of a superior high strength alloy that prevents fractures on the taper caused by the compression and expansion of the hollow taper.

Shrink Fit Toolholders are manufactured from H13 or equivalent material. This ensures long continuous service, heating cycle after heating cycle.

FEATURE END:

Taper-to-Feature End runout is critical to any precision machining operation. The lower the feed rate the more runout will effect performance. Toolholders intended for the highest speeds need to have the taper to second end feature ground to the closest obtainable concentricity.

The ERos® system has less than .00004" or 1 micron of runout gaged from taper to collet seat. A Shrink Fit tool has a gage tolerance of .0001" or 2.5 microns. Production gage toolholders such as an end mill holder or shell mill holder have a gage tolerance of .0002" or 5 microns of runout between taper and second end ID or OD.

ID bore tolerance is nominal +.0002" /- .0001" and OD feature tolerance is nominal +.0000"/-.0002".

Diameters are held to a nominal +.0002"/- .0001" on the inner diameters and +.0000/- .0002" on all OD features. All features are ground in a taper pot chuck to insure close runout specifications between taper and the feature. All end mill holder ID's are air gauged and all diameters under 3/8" are diamond honed to avoid barreling at the cross hole.

MANUFACTURING SPECIFICATIONS

Features	Size Tolerance	TIR
Taper Type	≤ AT3	NA
Taper Roundness	≤ .00008	NA
End Mill/Collet Seat	+ .0001/- .0001	≤ .0002
Shell Mill Pilot	+ .0000/- .0002	≤ .0002
PC Connection Small	+ .0002/- .0000	≤ .0002
PC Connection Large	+ .0003/- .0000	≤ .0002
PC Face	NA	.0001
Power Milling Chuck	+ .0002/- .0000	≤ .0002
Heat Shrink	+ .0002	≤ .0001

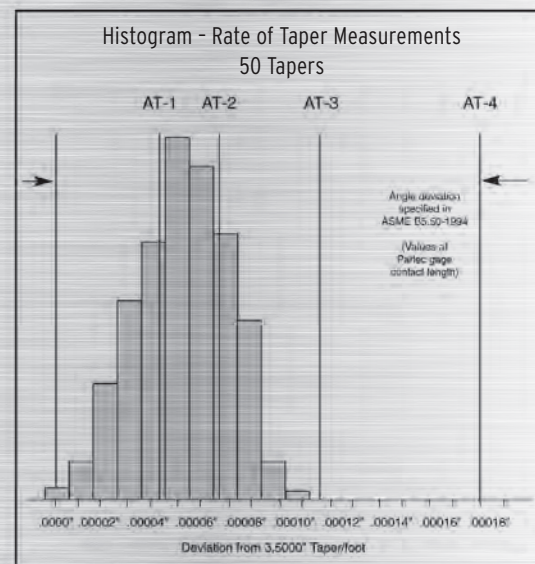
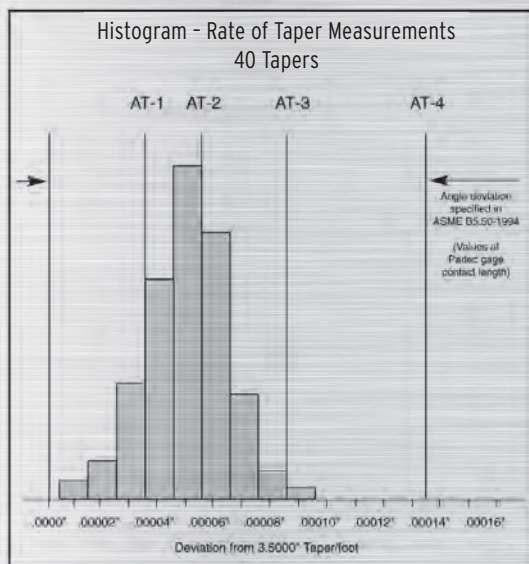
> Tapers

Parlec tapered toolholder shanks are manufactured in accordance with ASME B5.50 - 2009 (Per ISO-1947).

- Angle deviations are allowed only in the direction that increases the rate of taper.
- The attached histograms illustrate the results of measurements taken on Parlec manufactured tapered toolholder shanks. These represent typical manufacturing process output results.
- The horizontal axis of each histogram represents cone angle deviations from 3.500" nominal.
- Additionally, the placement of the grade level lines represent the allowable angle tolerance deviation at Parlec's taper gage contact lengths.
- Based upon the observed manufacturing process variation and the location of the process averages, as illustrated in the histograms, the following process performance can be summarized:

PROCESS PERFORMANCE

Type	% of Toolholders Meeting (Cumulative %)	Actual Deviation from 3.5" Per Foot
#40	AT-1 = 10	≤ .000034
	AT-2 = 62	≤ .000053
	AT-3 = 99.9	≤ .000085
#50	AT-1 = 31	≤ .000051
	AT-2 = 83	≤ .000069
	AT-3 = 99.9	≤ .000109



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